TRANSPORTATION AND LOGISTICS INDUSTRY SUPERVISORS' PERCEPTIONS OF KNOWLEDGE AND SKILLS NEEDED BY ENTRY-LEVEL MANAGEMENT TRAINEES

By

Donald K. Graham

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Abstract of Dissertation Presented to the Graduate School of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

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Donald K. Graham

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The primary intent of this study was to develop a database to aid in the planning, implementation, and evaluation of baccalaureate programs in transportation and logistics. Opinions were sought from selected motor carrier supervisors regarding 46 knowledge and skills areas and 38 college courses that might be important for the job performance of new graduates. The areas and courses were developed through a literature review. Also, data were obtained to determine the uniformity of opinions among respondent subsets.

The research instrument was a mailed questionnaire sent to 181 supervisors employed by 10 carriers in 8 southeastern states. Valid responses were received from 106 supervisors (a 58.6% return rate). The opinions were expressed on a 5-

point "extremely important"-to-"not at all important" Likert scale.

The data were used to rank by median response the relative importance of the knowledge and skills areas and college courses. The data also were used to test the independence of the supervisors' opinions relative to their years of motor carrier experience, the size of their employer, the geographical location of their employment, and their area of supervisor responsibility. The chi-square test was used with the 0.05 level as the minimum for a significant difference. As a part of the data analysis the areas and courses were categorized as being essentially human relations/communications, technical, or a combination of these.

The supervisors overwhelmingly rated the human relations/communications areas and courses as the more important. Their opinions were generally independent of experience, employer size, job location, and responsibility. Of the 332 chi-square statistics calculated, only 22 were significant beyond the 0.05 level. For the other 310 opinions (93.3%), the proposition of independence could not be rejected.

Conclusions and applications from this study include the need for emphasis on human relations in advanced courses. Also, industry/education interrelationships, possibly through local advisory councils, should be actively maintained.

CHAPTER I
INTRODUCTION

Background and Justification

What is, or should be, the purpose of American higher education relative to its students and their future? Bledstein (1977) suggested that the abilities to read, write, analyze problems, communicate, and present reasoned arguments are so basic to adult life as to compose the core of higher education. Bowen (1982) pointed to broader social benefits--an increase in economic productivity, an enhancement of national prestige and power, an aid in the reduction of violent crime, and a diminishing of welfare rolls. Squires (1979) viewed American higher education as both a democratizing force counteracting the inequalities of the larger society by creating greater social and economic equality and as a provider of the skilled manpower required of our technologically complex society.

Mills (1977) was either sorrowful or resentful about the vocational movement in higher education. He "cried" that the merchant ethic finally had invaded education and saw the trend of the 1970s as a deformation of schools into training factories manned by brigades of new merchantment faculties teaching new merchant curricula. Mayhew (1979), no less forcefully than Mills, stated that the first and most important reason Americans support and attend college is the

belief that it improves their economic chances. He held that any college not meeting the merchant ethic demand could not survive.

Mayhew's statement about economic enhancement through higher education is supported by others. In 1977, Mills, even in opposition, stated that he suspected an impressive majority of students then enrolled would agree to improved performance in their economic worlds as the first, if not sole, purpose in their attending college. Levine (1981) said that three-quarters of the freshmen in college list "getting a better job" as their basic reason for being there. He further stated that nearly half of all undergraduates would leave school if they thought it was not helping their job potential, and that more than one-third would leave college if they could obtain immediately the employment they anticipated upon graduation.

Some writers have lamented the conflict they see between the historical commitment of education as "seeker and disperser of truth" and the growing demand for economic and employment enhancement. To Boyer (1977), however, the view that collegiate traditions are doomed if study prepares students for finding and holding jobs not only distorts the present, but also denies the past. He observed that formal education, from its earliest days, has been defined and defended on the grounds of its usefulness for the world of work.

Such definition and defense is, of course, especially true for the professional schools (e.g., business, education, engineering, law, medicine, technology). As Chickering (1977) pointed out, a major characteristic of the expanding service sector in modern society, as opposed to the production sector, is increased demand for professionals in such fields as education, health, management, science, and engineering. The foundation of an advanced service economy, which the United States is becoming, is trained and well-educated persons. Specialized training, or higher education, is necessary because achieving high quality services is more complicated than producing a high quantity of goods. Chickering also noted that service economy quality results more from human-human interaction rather than from human-machine interaction. And given human complexity and orneriness, it is difficult even with training to develop and implement quality solutions. Without "good and proper education," a service economy is impossible.

Such a good and proper education is particularly important as it impacts a society's transportation and distribution system. A modern, industrial economy cannot function without an efficient and effective system of persons and goods movement. Efficiency and effectiveness are a direct result of quality person-person interaction.

According to Bowersox, Calabro, and Wagenheim (1981), the economic growth of any society is directly related to the

availability and quality of transportation. They stated that, beyond question, a society without an advanced transportation system remains primitive. And where just a primitive transportation system exists, the population is consigned to a subsistence form of economics, dependent upon the area immediately around them for necessities (Fair & Williams, 1981).

In the United States, the benefits and problems of the world's most advanced market economy are enjoyed and endured. These benefits and problems both produce and are produced from the world's most advanced distribution system. Wood and Johnson (1983) reported that the transportation industries altogether account for over 21% of the United States gross national product. This is a proportion that has held fairly constant over time (Bowersox, 1974; Heskett, Ivie, & Glaskowsky, 1964). In 1984, the nation's total freight bill was 259.4 millions of dollars (Transportation Policy Associates [TPA], 1986).

In terms of freight moved, the growth of the transportation system in the United States has been dramatic. From 1950 through 1984, the millions of tons moved domestically increased more than 80%, from 3,043 million tons annually to 5,470 million (TPA, 1986). Yet while the quantity of freight moved annually has increased so dramatically, employment within the industry has remained rather constant. During the period of 1977-1984, domestic

tonnage increased 1.7%, while total employment in the transportation industries for the same period actually decreased by 0.7% (Department of Labor [DOL], 1985).

It can be assumed that the carrier industry has been able to handle increasingly larger quantities of freight with a constant-sized workforce through the infusion of better prepared employees. Such an assumption is supported by the data. In 1977, approximately 11.4% of the motor carrier employees were in supervisory or managerial positions (DOL, 1985). By 1984, supervisory and managerial positions had grown to 13.0% of all trucking and truck terminal employment. Since supervisors and managers typically require more training and education, it can be argued that the workforce is increasingly better prepared.

This growing importance of transportation education was recognized by the Board of Regents of the State University System of Florida. In 1969, when the University of North Florida was proposed for location in Jacksonville, the proposal included a Department of Transportation and Logistics. That location was considered a natural setting for the study and teaching of transportation and physical distribution (State University System of Florida [SUS], 1979). All transport modes, domestic and international, contribute to and draw from the industrial base of northeast Florida. Both carriers and shippers draw heavily on the area to satisfy manpower needs.

The University of North Florida, "from its earliest developmental efforts in 1969, has accorded transportation and logistics a high priority in instruction, research, and service" (SUS, 1979, p. 40). The major thrust of the Department of Transportation and Logistics at the University of North Florida was, and is, instruction, research, and service within Florida. In a State University System of Florida (1979) report the purposes were stated as follows:

> The program has two major purposes: (1) to prepare persons entering the field to meet the transportation, distribution and international trade needs of Florida and the nation and to improve the professional capabilities of persons already employed in these areas; (2) to provide technical assistance to business, industry and government, including urban communities, and to resolve transportation, distribution and international trade problems through the application of relevant research. (p. 40)

The Department of Transportation and Logistics welcomed a charter class of 19 students in 1972 (Department of Transportation and Logistics [TRL], 1985). That number grew to 25 for the fall, 1973 term. By 1977 the number of transportation and logistics majors reached about 60, and has remained fairly constant at that number through the 1985-1986 academic year. During those early years, the Department received two signal honors. In 1974 the Department was recognized by the Board of Regents as one of five initial "Programs of Distinction" (an effort by the Florida Legislature to recognize and emphasize unique and innovative academic programs). In 1978, the Department again was recognized when designated by the

Board of Regents as one of several "Centers of Excellence" and to participate in the "Quality Improvement Program."

The early classes of transportation and logistics majors were comprised primarily of two types of students. Many were persons already employed in the local transportation and distribution industry and were attending classes part-time in a personal enhancement and advancement effort. Most others were students who wanted a degree in business administration, but felt the more established business majors (e.g., accounting, management, marketing) were too traditional. They were seeking something "different."

Some 10 years after the Department offered its charter classes, the profile of its majors had changed. By 1980 the majority of transportation and logistics majors were younger students, usually coming to the university without field experience, who made a conscious and studied decision to major in transportation and logistics because of the employment opportunities they foresaw.

In the spring of 1973, at the end of the university's first year of classes, the first student in transportation and logistics graduated. Between then and the fall of 1985, approximately 140 students have completed the program. The majority of these graduates, some 75% to 80%, have been employed within the motor carrier industry (J. A. Smith, Jr., personal communication, May, 1985). Most of their jobs have been located in the southeastern United States. For

graduates not securing motor carrier industry jobs in the southeast, employment has been with other carriers, with motor carriers in other geographic locations, with industrial shippers, or, in a few cases, in non-transportation fields.

Of the graduates finding employment with motor carriers, most took entry-level jobs. Exceptions were those employed, some for several years, before and during their time as students and already well into their employer's hierarchy. The entry-level positions found by most graduates included dock supervisor; inbound/outbound foreman; marketing trainee; freight bill auditor; cashier; overage, shortage, and damage clerk; terminal manager trainee; routing and scheduling clerk; and general management trainee.

If it is assumed that a major objective of professional schools, including colleges of business administration, is the preparation of students for useful employment, it is important that a student's experiences in a business college, and especially in the courses of his/her major field, effectively reflect the current and projected needs of industry. Information regarding such needs comes to faculty and other program planners primarily through graduate and employer feedback. This feedback, however, too often is piecemeal, non-directed, and uncoordinated. A review of the literature, especially as related to the transportation and distribution academics, supports this generalization.

Early in the development of transportation and logistics education an attempt at formalizing the program planning, implementation, and evaluation process was undertaken by the American Society of Traffic and Transportation [ASTT]. A major result was a model systems approach to transportation education planning (Christner, Cline, Cress, & Metcalfe, 1966). The model began with a definition of educational objectives, from which educational content and criterion measures were developed separately. A weakness of the model was in the assumption of program objectives. The authors proposed that "the training objectives for the transportation curriculum will be based on future job requirements. Once these objectives have been specified, specific courses for the curriculum can be determined" (Christner et al., 1966, p. 14). However, nowhere in the ASTT model was there an indication of how objectives based upon future job requirements were to be developed. Yet the objectives must arise from somewhere. And though the authors of the ASTT model proposed objectives based upon future job requirements, this does not appear to have happened. In 1969, Farris et al. suggested that part of the problem of insufficient demand for transportation graduates was caused by the difference between what faculties want to teach and what employers want taught. Piercy, Krampf, and Banville (1977) quoted one manager who responded to a question about transportation and logistics education as follows:

> Generally speaking, the academic community is not in tune to today's needs of industry. Most universities attempt to mold industry's requirements into what they believe should be taught rather than vice versa. Consequently, a great disservice is being done to well-intentioned students. (p. 75)

Moffatt (1983) provided data indicating that the trend has continued. He reported that of 94 respondents from 220 schools polled, only 7 could recall occasions when they surveyed the demand for logistics courses in their region. The great majority were specific in reporting no such surveys, and 12 left the question blank. In support, Barks (1983) noted that distribution managers, increasingly, say it is time for the academicians to produce graduates and ideas that can be absorbed readily into everyday application. "We don't have time to nurture these kids along; we need people who are thoroughly prepared and adapted and able to move right along with us in these dynamic times for distribution" (p. 56).

In brief, given the importance of transportation and logistics to society, and the paucity of information about the extent to which graduates of academic programs in this field are in fact equipped to take their positions in this important industry, this study was proposed. The information obtained, analyzed, and presented through this research procedure was intended primarily for use in educational planning and evaluation within the Department of Transportation and Logistics at the University of North

Florida. It was anticipated, however, that the findings of this research would indicate no significant differences in the opinions of motor carrier supervisors regarding the needs of transportation education. Were this true, application of these efforts reasonably could be extended to transportation programs at least regionally, if not nationally, with implications to all areas of business education. Such applications might relate to establishment of program objectives, selection and direction of faculty, selection and prioritization of research and service projects, development and scheduling of specific course offerings, recruitment of students, placement of graduates, academic and career advising, and evaluation related to any of these decision areas.

Statement of Purpose

The purpose of the study was two-fold. First, information for consideration and guidance in the planning, implementation, and evaluation of post-secondary transportation education was to be collected, analyzed, and presented. The source of such information was motor carrier supervisors and mid-managers employed in the southeastern United States. Second, guidance for future research was to be provided. The anticipation was that motor carrier personnel, regardless of their individual work backgrounds, years of experience, location of employment, or employer size would express

essentially the same industry needs. Support for this anticipation could aid other educational planning efforts displaced in time and/or location.

The focus of the study was, thus, opinions or perceptions of selected managers or supervisors within a portion of the motor carrier industry. These opinions related to knowledge and skills areas and courses which entry-level employees might acquire while obtaining a Bachelor of Business Administration degree with a major in transportation and logistics. Also of interest were possible relationships between certain characteristics of the respondents and their opinions. Such interest arose from the dynamic nature of the transportation industry. In transportation, change has been constant and continuous. This might cause the opinions of supervisors regarding knowledge and skills areas and courses needed by entry-level employees to differ.

Specifically, answers to the following research questions were sought:

1. As perceived by selected motor carrier supervisors, what was the relative importance of knowledge and skills in certain areas of study typically covered in studying for a Bachelor of Business Administration degree with a major in transportation and logistics?

2. As perceived by selected motor carrier supervisors, what was the relative importance of specific business administration or related courses?

3. To what extent were the opinions of the respondents related to the following:

a. the respondent's experiences in the motor carrier industry; i.e., were the data consistent across supervisors employed in the motor carrier industry for different numbers of years?

b. the size of a respondent's employer; i.e., were the data consistent across supervisors employed by motor carriers of different sizes in terms of annual operating revenue?

c. the geographic location of a supervisor; i.e., were the data consistent across the various states within which respondents were employed?

d. the general area of a respondent's responsibility; i.e., were the data consistent across various areas of supervisory responsibility, such as road or terminal operations, safety, maintenance, sales, or traffic?

Delimitations and Limitations

In the development and implementation of this study, the following confinements were observed:

1. Only program questions related to potential employment by baccalaureate degree students majoring in transportation and logistics were addressed; opinions or perceptions relating to entry-level employees with other majors were not sought, nor were questions regarding general education relevance and/or requirements raised.

2. Respondents were sought at the supervisory and middle-management level, i.e., persons known to, or most likely to, supervise directly employees newly graduated with baccalaureate degrees.

3. The population of participants for the questionnaire survey was confined to supervisors of motor carrier firms located within the southeastern United States, specifically within the states of Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. All of the 46 motor carriers identified as operating within the southeastern United States were contacted (See Appendix A). The owners or managers of these firms were requested to identify up to 10 potential supervisor respondents from each state. This process resulted in 10 firms responding with the names and addresses of 193 managers or supervisors. Of these, 181 were requested to participate (See Appendix B). No attempt was made to control, through the selection of potential respondents, managers or supervisors representing any specific employment environment or background. Valid responses were received from 106 supervisors--a 58.6% response rate.

4. No attempt was made to measure or analyze any differences between an educational model proposed collectively by the survey respondents and any academic program in transportation currently in operation.

Given the foregoing, application of these results to other than motor carrier modes, or to motor carriers operating beyond the geographical area studied should be done only suggestively. Similarly, application to non-degree programs, to associate degree programs, or to graduate programs should be made only with care and consideration. Time and setting also limit generalizations. The entire transportation industry has been involved in dynamic changes; as such, any applications of these findings should be accompanied by awareness of both local and current conditions.

Definition of Terms

Annual operating revenue is the cash or other items of value received by a firm for goods sold or services rendered. Annual operating revenue, in the transportation industry, is revenue generated solely through provision of the transport service during a particular calendar or fiscal year. Any revenue generated through non-transport investment opportunities is not included in annual operating revenue.

Areas of supervisor responsibility are the managerial responsibilities of a respondent at the time he or she completed the questionnaire for this research. In transportation, supervisory responsibility is broadly divided into either marketing or operations. Further subdivision may vary greatly from one firm to another. However, sales and

traffic generally are the major marketing responsibilities, while operations typically includes maintenance, road, safety, or terminal assignments.

Entry-level managerial employee is a person hired into a position requiring minimal experience; as related to the present study, the minimum educational requirement would be a bachelor's degree, but virtually no related work experience would be expected.

Knowledge is the range of someone's information or understanding about something with familiarity gained through experience or association; acquaintance with or understanding of a science, an art, or the procedures and techniques comprising a defined job.

Logistics is the integration of two or more activities for the purpose of planning, implementing, and controlling the efficient flow of raw materials, in-process inventory, and finished goods from point-of-origin to point-of-consumption. These activities include, but are not limited to, customer service, demand forecasting, distribution communications, inventory control, materials handling, order processing, parts and service support, plant and warehouse site selection, procurement, packaging, return goods handling, salvage and scrap disposal, traffic and transportation, and warehousing and storage (Coyle & Bardi, 1984).

Motor carrier is a firm offering transport services on a for-hire basis wherein the primary equipment or vehicles are motor trucks.

Skill is the ability to apply one's knowledge or experience effectively in the performance or completion of a job, an ability developed to some degree of proficiency.

Supervisor's experience is the approximate number of years a supervisor respondent has been employed in the motor carrier industry in any capacity. Actual experiences are so individualistic as to be meaningless for comparison. "More" and "fewer" years of general motor carrier experiences could result in differences of opinion regarding requirements for entry-level employees.

Transportation is an activity that provides for the movement of goods and individuals from one place to another, generally to achieve place utility (moving goods to a place where they can be used) and/or time utility (moving goods to a place when they are desired by consumers) (Talley, 1983); or the management of carrier firms that supply transport service. The first definition is applicable most generally in economic or social theory. The second is a generally accepted "field definition" or substitute for carrier management.

Organization of the Research Report

The study is presented in five chapters. Chapter I has included background and justification, a statement of

purpose, delimitations and limitations, and definitions of terms. Chapter II is a review of selected literature. Chapter III is used to present the research procedure. In Chapter IV the data and the analysis are detailed, and in Chapter V the summary and conclusions are presented.

CHAPTER II
REVIEW OF RELATED LITERATURE

Introduction

There are three general areas of interest associated with this research. First, support for the intended application of the information obtained through the survey should be established. Thus, the first section of the review is focused on planning and needs assessment in higher education. Second, knowledge of similar efforts related to programs in transportation and logistics is necessary. Therefore, the second section of the review is devoted to planning and needs assessment as a basis for transportation education. And third, justification for the survey method and data analysis procedures is required; as such, this is the focus of the third section of the review.

Planning and Needs Assessment in Higher Education

Higher education in the United States is accomplished primarily through the efforts of human organizations which survive and flourish as their members are able to keep general purposes and objectives at the heart of their decision-making processes (Miller, 1979). Otherwise, random program patterns are likely. According to Bowen (1982), avoidance of such patterns begins with planners sensitive to

the educational needs of society, especially as such needs are viewed by informed and well-educated people.

Barks (1983) felt that random program patterns are too prevalent in higher education. He said it seldom is too long after graduation, in too many cases, before educators hear from employers about perceived shortcomings in the new graduate's preparation. Barks thus agreed with Toll (1982) that planning may be the most important activity in higher education during the 1980s. Their agreement continued in that, except for a few of the most prestigious schools, institutions not looking ahead, analyzing their new environments and clienteles, preparing for new and different academic shifts, and recognizing fiscal realities faced serious difficulties, even to the point of survival.

Such looking ahead, analyzing, and preparing is, according to Miller (1979), the distinctive feature of organizations--the primacy of goal attainment relative to all other problems and opportunities. And, as Mayhew (1979) pointed out, goal attainment, except by accident, begins with planning. Planning is the development by leaders of clear statements of program objectives and candid commentary on outcomes, actions, actors, resources, completion times, and accomplishment evaluations.

If goal attainment begins with planning, where is the beginning of planning? According to Mayhew (1979), planning begins with the development by institutional leaders of a

clear mission that will attract the clientele they wish to serve and the support needed for survival. Otherwise, a rush of course and/or program development, which typically circumvents the establishment of a valid, applicable mission, likely develops. Just as typically, this leads to proliferation and weakness of offerings, to misguided teaching assignments, and generally to unjustifiable expenditures (Dressel, 1976).

Such practices should not be tolerable to educational leadership. The capacity of society to educate is, and will continue to be, constrained by limited resources (Joint Legislative and Executive Commission, 1980). Given the limitations of these resources and the growing competition for them, inefficiency in their application itself becomes an unjustifiable expenditure of quality. This leads to what Niebuhr (1982) identified as one of the four major "troubles" confronting American higher education--the loss or regulation of legitimacy. The avoidance of such trouble begins with planning. With planning, what school faculty and administrators want to do is matched with the realities of society's, as the grantor of legitimacy, needs.

Legitimacy is particularly important in curriculum. This is the sum of learning activities and experiences that students have under the direction of a school (Finch & Crunkilton, 1984). Pratt (1980) reported that the justification for curriculum most widely recognized in American educational writing is its helping to meet significant human needs. Managers in education thus

must assume the responsibility to plan, develop, and implement curricula meeting society's needs in general, and students' needs in particular. Such responsibility has deep roots in American education.

In spite of such recognition, educational planning does not always begin with a determination and evaluation of human needs. Smith and Clements (1984) observed that most curriculum models start with the establishment of goals and objectives. They stated further that too often these goals and objectives were based upon the goals and objectives of faculty and administrators rather than societal needs, a practice too often leading to the development of new courses or programs which were neither needed nor wanted by students or society. This condition was cited earlier as a major weakness of the ASTT model for transportation program planning. The transportation curricula were to begin with goals and objectives, but there was no indication of a basis for these in social or industry needs.

Acceptance of the proposition that educational programs should serve first and foremost client needs--society in general and students in particular--leads to the concept of needs assessment (Patton, 1981). Without such assessment, curricula tend to evolve more from faculty interests and expertise than from student or social needs. Such goal displacement, according to Pratt (1980), becomes an almost universal tendency as institutions grow and come to feel their

mandate is secure. This tendency too often becomes more pronounced as one moves upward through the educational system.

In educational and psychological literature, the term "need" has tended to be defined as a deficit or discrepancy between the actual state of a person or group and an optimal state (Pratt, 1980). Anderson and Ball (1978) cautioned, however, that the optimal or ideal state might not be proper for establishing a discrepancy. The ideal state could be unknown, unrecognizable, or unmeasurable. Thus, Kaufman (1976) described a need as the gap between what is (the actual state) and what should be in terms of outcomes or results. He was supported by Pratt and English (1983) in emphasizing that needs are measured in results, not in gaps of inputs, resources, or processes. Pratt referred to these "basic" needs as those things or conditions without which an individual's or group's state would be significantly less than satisfactory. He further noted that needs were distinct from both wants and interests, neither of which were adequate as bases for curriculum. The first task, according to Pratt, of a curriculum planner was to identify basic needs.

A needs assessment, as reported by English (1983), is a process of determining the gaps between "what is" and "what should be" and of placing such gaps in priority order so that plans for closing them in sequence might be developed and implemented. Kaufman (1976) and Pratt (1980) earlier had made the same point. English further noted that a needs

assessment is not the same as an evaluation. In a needs assessment the gap of concern is that between "what is" and "what should be," with emphasis on "should be." In an evaluation, the gap is between "what is" and "what was intended," and is limited to an after-the-fact action.

Given the "what should be" emphasis of needs assessment, Smith and Clements (1984) rightly pointed out that related research must be directed at a school's or program's external public, and not just at full-time faculty and students. Similarly, Pratt (1980) observed that needs assessments involve the collection of both factual and opinion data, again from all of a school's main constituents. He proposed that three types of constituents should be consulted: those who have a right to be polled, those whom it is politically necessary to consult, and those having the special insight of expertise, such as employers. He continued that, while employers routinely were consulted in the design of vocational, technical, and professional courses, there was equal justification for employer consultation even in the design of English and mathematics courses.

With the number of traditional college students either static or declining, higher education is attracting an older, more experienced student body (Smith & Clements, 1984). These are students more knowledgeable in what they want and more quickly dissatisfied with programs and courses lacking relevancy. Finch and Crankilton (1984) stated that

vocational and professional programs thrive on relevance--the extent to which their curricula assist students in entering and succeeding in the work world. But such programs soon become outdated unless steps continuously are taken to maintain their relevancy. This requires, according to Smith and Clements, that the needs of the larger society must take priority over those of the school's own membership.

Planning and Needs Assessment as a Basis for Transportation Education

In business colleges planners have a primary reference point--the prospective graduates and the expectations which society, including the graduates and employers, have of business programs. Employers choose employees who will quickly be able to produce more than they cost (Geiger, 1980). And, although an employee may learn much of his or her trade on the job, education provides at least a prior and necessary base upon which this learning process occurs. Thus, Frey (1983) indicated that, as the latest technology continues to be applied to broader areas of production and service in growing circles of society, workers will require a more solid grounding in a range of fundamental skills increasing well beyond the "three R's."

Dressel (1976) said that, in spite of this increasing need for higher education having objectives founded within business and industry, schools have continued to emphasize specific knowledge and skills for which students have no use

and which they do not see as relevant to their plans. Thus, Jagow's (1975) plea that educational planning must be focused on students' career objectives remains critical. And there is an increasingly vocal cadre of business leaders saying it is past time for American business schools to update their programs ("The Swing to Practicality," 1979). Peter C. Krist, senior vice-president of Mobil Oil, said in a Business Week article that "history is important, but the students spend all their time reading cases instead of the Wall Street Journal. American business spends tremendous sums repairing the deficiencies of the educational system" ("The Swing to Practicality," 1979, p. 190).

The lack of a market orientation in education planning is now new. Smith (1974), in an examination of a series of executive development and training programs, found that few included a market approach to needs determination. In the overwhelming majority of cases, such programs reflected the resources and special interests of the sponsoring institutions. Programs serving the definable needs of industry and/or the community occurred by coincidence rather than by design.

By 1983, DeMott reported that many new business school deans and their faculties were beginning to stress practical, hands-on experience. Such emphasis, DeMott continued, amounted to a mini-revolt against what some have called a generation of generalists who do not really know how to get

down to running a business or solving problems on the plant floor. But the revolt remained "mini." Also in 1983, Muse declared that, in attempting to gain academic status on campus, too many business faculties continue to "drag" or de-emphasize courses such as salesmanship, advertising, purchasing, report writing, or anything else, with the exception of accounting, that smacked of vocationalism. As a result, the complaints that students were not very well prepared for entry-level jobs continued.

Employers have not limited their actions to complaining. According to Niebuhr (1982), the virtual monopoly position once held by colleges and universities no longer exists. While schools continue to serve some 12 million students, 46 million others, primarily employed adults, are securing an education elsewhere. Niebuhr estimated that the expenditures in corporate- and government-sponsored educational activities exceeded the $60 million spent by the nation's schools. Courses offered by United States business and industry range from basic English and mathematics to sophisticated instruction in marketing and human relations ("Why Business," 1979). These were available both during and outside working hours, and offered both on company premises and at regular schools. These are the result of employers' dissatisfaction with the performance of conventional schools in teaching the basics and in keeping employees abreast of technological and other innovations. Lamented a company official, "we're doing

what the educators ought to be doing. College graduates can't read, spell or write; typists can't type more than 30 words a minute--and they all have poor vocabularies" ("Why Business," 1979, p. 70).

The study and teaching of transportation and physical distribution, relative to that of other business functions, is new. Coyle and Bardi (1984) pointed out that business logistics, which includes transportation as a subsystem, has been a recognized field of education only since the early 1960s. Yet the early writers in this field recognized the importance of industry input in planning their programs. In 1963, Sampson advised that an important role of the university was to look toward the future, and that in business and industrial management, the world outside the university was the teacher's laboratory where that future was developing. What is taught, and how it is taught, should be impacted considerably by what and how program planners foresee the environment 10 to 40 years away.

Fifteen years after Sampson's advice, the same thought was expressed in a summary of the need for Florida to have a "Center of Excellence" in transportation and logistics (Department of Transportation and Logistics [TRL], 1979). Within the summary was recognition that simply to teach the history and precedence controlling current rules, regulations, laws, and policies was not enough. The need was, rather, to turn out graduates prepared to meet society's

transportation and distribution challenges both then, today, and tomorrow.

Although the need for practitioner input was recognized, compliance did not necessarily follow. This is verified by a review of the transportation education articles found in the Transportation Journal, recognized as the preeminent source in the field (W. H. J. Cunningham, personal communication, July 1985; K. H. Horn, personal communication, July 1985; Stock, 1985). In Table 1 are listed the publication date and title of Transportation Journal articles over a 25-year period related to education. Of the 26 articles, only 3 involved solicited data from the transport industry. The others either expressed personal opinions regarding transportation education or, more recently, are unrelated to educational program planning.

In 1966, the entire spring issue of Transportation Journal was devoted to a single, major report on transportation education (Christner et al.). The report was the result of a study by the Battelle Memorial Institute [BMI] under contract with the American Society of Traffic and Transportation.

> Research objectives were to determine the main features of an education plan in traffic and transportation to help assure the right combination of academic and technical skills in new recruits, and to provide opportunities for present members of the profession to obtain advanced training by convenient and efficient methods. (Christner et al., 1966, p. 5)

Table 1

Transportation Education Articles Published in the Transportation Journal, 1961-1986

Date	Title
Fall, 1961	Extras in education for transportation management
Winter, 1963	Transportation education, another view
Spring, 1963	Transportation's future in the universities
Summer, 1963	Transportation's future in the universities revisited
Summer, 1963	Transportation education and traffic and transportation managers
Summer, 1963	The dynamic nature of transportation education
Fall, 1964	Transportation: A developing profession
Spring, 1965	What next for transportation education?
Spring, 1966	A study of transportation education needs
Winter, 1967	Transportation and logistics education in graduate schools of business administration--A summary report
Spring, 1967	Is there a need for transport education at the college level?
Fall, 1969	Transportation education--an inter-disciplinary approach
Spring, 1971	A survey of the elementary transportation course at selected universities
Summer, 1972	The educational challenge facing logistics and physical distribution management
Summer, 1972	Transportation education: An evaluation
Winter, 1974	A survey of current status and trends in transportation and logistics education

Table 1 (continued)

Date	Title
Winter, 1977	Transportation/logistics curriculum development: Bridging the gap between industry and academia
Spring, 1977	Career education--school and industry working together
Fall, 1977	Industry evaluation of a transportation/logistics curriculum
Winter, 1978	The current status of business logistics education
Summer, 1979	Transport as an academic discipline, a profession, and an object of common European economic policy--A British view
Summer, 1979	Transportation curricula: Too domestic?
Winter, 1980	A model for the internationalization of transportation curricula
Fall, 1981	An analysis of author affiliation for publications in transportation and logistics academic journals
Fall, 1982	Logistics education as a career field
Summer, 1983	An evaluation of journals that publish business logistics articles

Data from two surveys were used in support of the ASTT-BMI report. In 1963, faculty members at Northwestern University completed a questionnaire survey of 2500 United States and Canadian schools. In this survey, information about existing or planned transportation education programs was sought. When the research at Northwestern University could not be completed due to processing difficulties, the

data were offered to ASTT and became part of the ASTT-BMI report.

Separately, the authors of the ASTT-BMI report conducted their own survey. "The purpose of this survey was to assess the adequacy of the education received by present transportation personnel in the opinion of top-level management, key traffic and/or transportation men, and traffic operations and/or transportation directors" (Christner et al., 1966, p. 57). The ASTT-BMI questionnaire included evaluations of certain knowledge and abilities held by employees, of topics generally taught in business schools, and of the importance of transportation relative to other business functions within the respondent's firm. There was no analysis of the data from this questionnaire presented other than a count of the number of respondents who did not indicate that the training relative to each topic was adequate.

The next Transportation Journal article based upon an industry survey was Piercy, Krampf, and Banville's "Transportation/Logistics Curriculum Development: Bridging the Gap Between Industry and Academia," published in the winter, 1977 issue. The article reported an attempt at Kent State University to bridge the reported communications gap between managers and academicians in the redesign of the transportation/logistics curriculum at the school. The "bridge" was a survey questionnaire mailed to a random sample of 555 executives drawn from a universe reported to be 20,000

carrier, industrial, and government transportation and physical distribution/logistics officials. Two hundred and twelve executives responded.

> Respondents were asked to rank, in order of importance, eight courses used in preparing college students for entering the field of T/L. Respondents were also asked to rank the importance of various college of business preparatory courses in the areas of accounting, economics, finance, marketing, and management. (Piercy et al., 1977, p. 77)

The authors of the Kent State University study reported their findings in tabular form presenting the mean and median rankings of the transportation/logistics and business preparatory courses. They also reported that several cross-tabulation analyses were performed to determine whether there was any relationship between the perceived preparation expected by respondents and such variables as age, number of years in transportation/logistics, size of firm, and managerial position. The results indicated only minor differences.

In the fall, 1977 issue of Transportation Journal, Mundy, Langley, and Gilson reported their study of an evaluation by business executives of transportation/logistics courses offered, or planned for offering, at the University of Tennessee. The article was entitled "Industry Evaluation of a Transportation/Logistics Curriculum." As a part of their study, the authors conducted a questionnaire survey of executives of 805 leading firms in the United States. The firms included 405 transportation firms from the 1975 edition

of Moody's Transportation Manual and 400 manufacturing firms from the May 15, 1974, issue of Forbes. Requested was a rating on a 1 - 5 Likert scale of the importance (1 = extremely important, 5 = unimportant) of present and potential transportation/logistics courses at the University of Tennessee, and suggestions for potential courses not listed. One hundred and seventy-nine usable responses were received. The authors reported in tabular form the average importance rating and standard deviation of 37 transportation/logistics courses taken from The University of Tennessee Record. Similarly reported were the results of a stepwise discriminant analysis conducted to determine which course importance ratings best differentiated respondents in the transportation industry from all other respondents.

The article by Mundy et al. was the final report, to date, in the Transportation Journal related to transportation education planning and based upon industry input. However, in 1982, Halloran completed his doctoral study related to developing a technique for use in identifying curriculum goals and objectives for community college transportation programs. A part of his reserach was to determine if there were significant differences between the 10-member Advisory Committee for Transportation, Florida Junior College at Jacksonville, and a larger representative sample of transportation practitioners relative to an evaluation of identified skills and abilities that a student completing a

2-year transportation program at a Florida community college transportation program should possess. Halloran found that an advisory committee with as few as 10 members could identify educational goals and objectives for a Florida community college transportation program as adequately as could a larger number of practitioners. He reported no difference of opinion between the members of the advisory committee and the 72 local practitioners responding to his questionnaire about the main educational requirements of the Jacksonville transportation industry.

The inference, then, drawn from a review of the literature regarding the focus of transportation education on industry requirements is that such focus is quite limited. Throughout the development of transportation-related literature there has been a fairly strong thread of recognizing the need for practitioner input. Such thread has not, however, been woven into the fabric of transportation education. Of the 26 education-related articles appearing in the Transportation Journal from 1961 through 1986, only 3 reflected practitioner evaluation; and 2 of those were limited to evaluations of transportation programs at individual schools.

Surveys and Business Related Educational Planning

One avenue of resolving the difficulty between the educational establishment and at least the business/

industrial portion of its constituency begins with the systematic development of academic objectives. Dressel (1976) said that, at some level across most educational boundaries, there should be a limited number of educational objectives which subsume all more specific ones. Thus educators, students, and employers would be provided a sense of direction, coherence, and continuity which presently appears to be lacking in much of undergraduate education. As Miller (1979) said, too often these most important areas of educational decision making either are left to chance or not considered sufficiently important to warrant continuous monitoring or renewal.

Asher (1976) confirmed that decision making is a central function of management, and continued that knowledge is a basic ingredient of decision making. And according to Mayhew (1979), knowledge for comprehensive planning decisions is necessary in the following distinct phases:

--anticipating the future,

--formulating strategic objectives,

--defining individual and social values,

--inventorying current resources and calculating needed new ones,

--developing work programs,

--evaluating accomplishments,

--making organizational arrangements, and

--performing the work program.

All of these phases, possibly excepting the final two, should include, at least for consideration, information from the world of business and industry.

Yet Asher (1976) pointed out that, typically, administrative decision makers in education are concerned primarily with summary data collected for central and accounting purposes, social bookkeeping, enforcement of regulations and laws, and the distribution of reimbursement funds. He called this after-the-fact information for before-the-fact decisions. This is critical since planning is very much before-the-fact. Professional decision making, therefore, must be based not only on development of alternatives from which choices are made, but also on the availability of knowledge upon which to draw in selecting the alternative best for a given educational situation.

It is in making such knowledge available that the systematic search for information becomes critical. To Asher (1976), among the purposes of educational research is the generation of knowledge to advance the quality of education in more cost effective manners. Dressel (1976) maintained that a purpose of systematic, evaluative research is bringing to the conscious level, in forms applicable to decision making, the assumptions and values inherent in educational programs; relating these to anticipated programs, procedures, and expected accomplishments; and comparing such plans with actual functioning and results.

Travers (1978) added a note of warning against decision makers who may come to believe that research is a solution to problems. He observed that the results of educational research, especially of perception or opinion surveys, serve the purpose only of providing information and of stimulating thought, not of solving specific problems.

Assumptions and values inherent in educational programs of which Dressel (1976) spoke, and about which this study was concerned, are important bases for planning and evaluating decision making. Emory (1980) asserted that the area of people's expectations regarding education must be of great managerial interest. He further declared that such information can be secured best, if not only, through survey questioning. He was supported by Borg (1981), who said that the questionnaires and interviews typical of survey research are used to determine the opinions, attitudes, preferences, and perceptions of persons of interest to the educational researcher.

Although survey questionnaires have found limited application in preparation for transportation education planning, their use in other academic areas is evident. Campagna, Georges, and Talarzyk (1980) reported a study undertaken to examine the perception of individuals in the fields of business and accounting concerning higher education generally and, more specifically, the academic program of the College of Administrative Sciences, Ohio State University.

The practitioners' perceptions were related to the preparation of students for careers upon their graduation and 10 years after that event.

Campagna et al. (1980) began their research by pretesting a small questionnaire with 25 business and community leaders actively involved as the Business Administration Advisory Council [BAAC] of the College of Administrative Sciences. The pretest was used to improve the instrument and to provide a base for comparison of the perceptions of the BAAC group with persons to be included in the final sample. The finalized questionnaire was mailed to 700 individuals who made up the college partners organization and employer representatives who had conducted on-campus interviews with graduates of the college during the 1974-75 academic year.

The Campagna et al. (1980) questionnaire was divided into six parts. In part 1, respondents were to indicate the "degree of importance" of specific college program components as viewed then and after the next decade. Part 2 was designed to elicit specific attitudes of respondents toward business administration programs and students. In part 3, the respondents were to rank order a set of 10 specific employee traits in terms of their importance to the world of work. In part 4, business administration graduates were to be evaluated vis-a-vis graduates of other colleges relative to the traits ranked in part 3. In part 5, respondents were

provided an opportunity to state, in their own words, perceptions of the strengths and deficiencies of the Ohio State University undergraduate business and accounting degree programs, faculty, students, and staff. Finally, respondents were to provide, in part 6, background information to enable categorization of the data into separate groups for purposes of comparative analysis.

Campagna et al. (1980) received 314 usable questionnaires, a 45% response rate. Their research results were presented in tabular form. For example, for each of 18 business program components evaluated by respondents, a table was presented providing the percent indicating "extremely important," "important," "undecided or no opinion," "little improtance," or "not important." Also in tabular form was a breakdown by respondents' type of industry employment of the "extremely important" plus "important" evaluations for the program components "now" and "in 10 years."

Trimby, in 1982, completed a questionnaire survey study designed to identify the most important entry-level instructional development competencies required in a variety of business and industry settings, as perceived by persons responsible for supervising the instructional developers. Trimby also sought to investigate whether type of business or industry; principal function of the instructional development, training, or human resource development unit; or

size of that unit were important factors related to the competencies desired.

Questionnaires were sent to 300 members of the senior trainers interest group of the American Society for Training and Development. Trimby received 162 responses, of which 127 were usable. Data were analyzed by tabulating the mean for overall importance of each competency to rank order the entire list. Repeated measures analysis of variance was used to determine whether differences between the means were statistically significant. An intraclass correlation was used to estimate reliability across the respondents.

Diffy's (1982) study was a determination of entrepreneurieal competencies most needed by women for successful management of small businesses. For the study, a survey instrument containing 56 entrepreneurial competencies was completed by 106 self-employed women in service and retail industries in Kansas. Respondents were asked to evaluate each competency as "very important," "important," "somewhat important," "little importance," or "no importance."

Using the chi-square test, Diffy identified 11 significant differences (0.05 level) between representatives of the service and retail areas. Through the median test eight significant differences were revealed. Statistical means were used to rank and report the importance of the competencies by three groups--service, retail, and service/retail combined. Means were reported in rank order

for the four categories of general competencies, mangerial competencies, marketing and sales competencies, and combined entrepreneurial competencies.

Brewer (1982) completed a questionnaire survey to provide a basis for establishing, changing, and/or updating the curriculum for administrative office managers in Kentucky. The study grew from a perceived need for a determination of the importance of business courses included in university administrative office management curriculum. Perceptions of course importance were obtained from selected educators and administrative office managers. Personal interviews and mailed questionnaires were used to collect data. Eighty-seven of 118 questionnaires were returned. The Kilmogorov-Smirnov (K-S) two-sample test was used to test for significant differences between the responses of the administrative office managers group and the educator group.

In 1983, Kitch used a questionnaire survey to determine the relative importance of certain topics in the development of a more effective data processing curriculum. In a nationwide survey, data processing teachers and data processing managers were asked to evaluate each of 90 topics for importance relative to the concepts of business data processing or computer literacy. The data were analyzed through the use of one-way analysis of variance, Spearman's rank order correlations, and frequency distributions.

Also in 1983, Anderson sought determination of the managerial knowledge and skill levels of existing managers in black-owned businesses, with implications for management training in predominately black business programs in land grant institutions. A management tools interview instrument was designed around the findings of three research questions: (a) Which management skills are known and used by managers in small black businesses? (b) What is the frequency of use of selected management skills in small black-owned business? (c) What is the nature of specific business management training needed and desired by black managers?

Anderson then designed a Likert scale to determine the degree of skill knowledge, the use of such skill knowledge in small black-owned businesses, and the perceived need for managerial help. The questionnaire was given to a random sample of 50 managers selected from the population of black managers from Mississippi, Louisiana, and Texas who had served in management roles in small black businesses for at least six months during the period 1977-1982.

The case is established, then, for decision-makers in higher education, and especially for planners, to seek and consider seriously marketplace information. Procedures also are available. The need is particularly relevant within any professional school. Here the efficiency of effort is enhanced by the more definable market, and its effectiveness measurable through feedback from that market. Since a

department of transportation and logistics typically is part of a business school, determination and evaluation of student-related objectives, again, should begin with industry.

CHAPTER III
PROCEDURES

Introduction

This investigation was a descriptive study with data obtained through a mailed questionnaire survey. In the following sections are presented descriptions of the selection of motor carrier firms from which potential respondents were requested, the selection of the supervisor respondents, development of the survey instrument, data collection, and data analysis.

The basis of this study was information needed for education decision makers in the area of transportation and logistics program planning at the baccalaureate level. The information related to opinions of selected managers and/or supervisors employed by motor carriers in the southeastern United States. The opinions sought were in two areas. First, opinions were sought that related to areas of knowledge and/or skills which entry-level employees--graduates of a baccalaureate program in transportation and logistics--should possess. These knowledge and skills areas typically are covered in transportation, logistics, and related college-level courses. Second, opinions were sought about the importance of specific business administration courses relative to industry applications. Additional information was

sought to aid in testing respondent motor carrier industry experience, respondent employer size, respondent location, and respondent employment responsibility as discriminators for future data collection.

Sample Selection

Selection of Motor Carrier Firms

Motor carriers known to operate in the southeastern United States--specifically in the states of Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia--were identified. This was accomplished through a review of Moody's Transportation Manual (Moody's Investors Service, 1984), an annual publication containing financial, managerial, and operating information on more than 1000 transportation enterprises, including more than 200 motor carrier firms. Information available in Moody's Transportation Manual included a list of the states in which each company operated, a list of the corporate officers, the corporate headquarters mailing address, and each firm's annual operating revenue. All motor carriers identified through Moody's Transportation Manual as operating in the listed states constituted the participate firms in the study. It was anticipated that approximately 60 motor carriers would be identified for contact; the actual number was 57.

Of the 57 identified firms, several were excluded from the study. This generally was due to their having gone out of

business or merging with another firm since the publication of Moody's Transportation Manual. Eventually, 46 carriers were contacted.

Selection of Supervisor Respondents

The presidents, identified by name through Moody's Transportation Manual, of the 46 motor carriers selected for participation in this study were the initial contact persons. Each president was mailed a request to provide the name and business address of up to 10 middle managers and/or supervisors located in each of the identified states which his firm served. The request letter included a description of the purposes and importance of the study, an explanation of the information requested, an assurance of confidentiality, and an offer to share a summary of the study's results. Included with the request letter was a copy of the questionnaire (just for the president's information), a postpaid, return-addressed envelope for receipt of the names and addresses, and a postpaid, return-addressed postcard. This card was printed to allow each president to indicate the following: that his firm would participate and that a list of supervisors could be expected shortly, that his firm would not participate, and that a summary of findings would be appreciated. The request letter and questionnaire are presented as appendices A and C, respectively.

Postcards were returned from 17 of the motor carriers. Thirteen firms declined to participate in the study. Eleven

presidents returned postcards marked negatively (one was returned after a follow-up request was mailed to non-replying firms), while two others returned their request letter similarly marked. Six presidents indicated their willingness to provide names and addresses of supervisors. One president returned a completed questionnaire, but supplied no list of supervisors to be contacted; the questionnaire was not included in the data analysis. Four carriers which did not return a postcard did supply a list of supervisors' names and addresses. There was no response, even after a follow-up request, from 22 of the carriers.

Names and addresses of 193 supervisors were supplied from the 10 participating motor carriers. Since this number was smaller than anticipated, with one exception all were contacted. The single exception was the 81 names supplied by one carrier. Of these supervisors, 25 were located in Florida. With so many other Florida supervisors already suggested, the decision was made to contact only 13 of this firm's Florida supervisors. Selection of the 13 supervisors was by specific choice to obtain even geographical coverage of the state. A total of 181 motor carrier supervisors and/or mid-managers composed the sample upon which this study was based.

In summary, of the 46 motor carriers requested to provide a mailing list of supervisors as potential respondents, 10 did so. Presidents of 13 of the firms specifically declined to participate in the study, and 22 provided no response

whatsoever. One president apparently completed the questionnaire himself and returned it without a list of supervisors. The presidents of the 10 participating firms supplied the names and addresses of 193 supervisors, of which 181 were contacted.

Development of the Survey Instrument

The survey instrument for this research was a mailed questionnaire in three parts (See Appendix C). The format of part 1 was such that each respondent was presented with a series of a knowledge and/or skills areas which an entry-level employee with a bachelor's degree might be expected to possess. The respondent was instructed to express his or her evaluation of the knowledge and/or skills areas relative to on-the-job application. The evaluation was noted on a 5-point Likert scale. The same format was followed in part 2 except that college courses typically included in business education were listed.

The series contained in part 1 of the instrument included both knowledge and skills areas. Such a mixture was necessary because the response items varied from fairly pure skills to pure knowledge. For example, billing, communications, computer operation, dispatching, materials handling, and typing primarily are skills items, though each must be based upon some degree of knowledge. Similarly, budget preparation, capital planning, human relations and behavior, plant/terminal location, rate theory, and transportation economics are

essentially areas of knowledge. For some items, such as computer programming, dock operations, freight bill auditing, procurement/purchasing, and traffic management, a knowledge/skills differentiation is, at best, judgmental.

Parts 1 and 2 of the survey instrument were developed through several sources. The literature review included the following: American Assembly of Collegiate Schools of Business (1984); Barks (1983); Brewer (1963); Campagna et al. (1980); Cherington and Schneider (1967); Christner et al. (1966); Farris et al. (1969); Flaumenhaft (1977); Galloway and Eldredge (1981); Halloran (1982); Harper (1965); Henderson (1963); Jaski and Moody (1977); Moffatt (1983); Mundy et al. (1977); Piercy et al. (1977); Rose (1967); Sampson, Farris, and Shrock (1985); and Taft (1975). Information used in the questionnaire also came from transportation programs found in the catalogs of the following schools: Arizona State University (1983), Golden Gate University (1984), Indiana University (1984), Michigan State University (1984), Pennsylvania State University (1983), Syracuse University (1984), University of Maryland (1984), University of North Florida (1984), and the University of Southern California (1984). Excepting the University of North Florida, these schools were identified by Barks (1983) either as having a "top 10" transportation/logistics program or as being "up-and-coming." Finally, suggestions for skills, knowledge areas, and courses were received from Professors Cunningham (personal

communication, March, 1985), Horn (personal communication, March, 1985), and Smith (personal communication, April, 1985). At the time the suggestions were received, each of these persons was a faculty member of the Department of Transportation and Logistics, University of North Florida.

Part 3 of the instrument was designed to secure demographic information related to research questions 3a, 3c, and 3d. Data relating to question 3b, each participating firm's annual operating revenue, were available in Moody's Transportation Manual.

Before the survey instrument was used, it was field tested. Respondents must be able to provide valid responses to the questions posed (Wiersma, 1980). This might not be possible if unsuspected difficulties existed in the instrument directions, or if misunderstandings, ambiguities, or useless or inadequate items appeared within the knowledge, skills, or course descriptions. A pilot run was a necessary approach to discovering such problems and a first step toward their elimination. Also, additional items of importance, or mechanical difficulties in data tabulation might well have been discovered. Therefore, the instrument was tested using Department of Transportation and Logistics, University of North Florida, alumni as respondents. J. A. Smith (personal communication, May, 1985) estimated that about 80% of the department's approximately 140 graduates were employed within the motor carrier industry. From 25 alumni responses, several

knowledge/skills area items were reworded, and two new ones were added (hazardous materials regulations, intermodal operations).

Data Collection

As has been noted, a list of potential respondents was received from 10 firms. The number of supervisor names provided per carrier ranged from 5 (by two firms) through 81. Although the number of carriers recommending respondents was small, the number and diversity of supervisors suggested appeared to be adequate for the purposes of the study. A total of 193 supervisors were recommended as respondents; 181 were contacted. Examples of the cover letter and questionnaire mailed to each supervisor are presented in appendices B and C, respectively. About two weeks after a cover letter and questionnaire had been sent to each suggested supervisor, a follow-up letter, with another copy of the questionnaire, was mailed to each supervisor who had not responded. Both mailings also included a postpaid, return-addressed envelope for the respondent's use in returning the completed questionnaire.

Valid questionnaires were returned by 106 supervisors (a 58.6% return rate). Of all returned questionnaires, only three were less than 90% complete and thus considered invalid. The 106 supervisors returning valid questionnaires represented all 10 firms providing a mail list. The annual operating

revenues of these firms ranged from $500,000 to $119,600,000. The number of years experience in the motor carrier industry of the responding supervisors ranged from 1 to 40. All 8 states included in the survey were represented, with 4 supervisors from Alabama returning completed questionnaires, and 25, the largest number of any one state, from Florida doing so. The present occupational responsibilities reported by the respondents were the most difficult to categorize. Even at the supervisory level there appeared to be extensive cross-responsibilities. A manager or assistant manager, for example, in many smaller terminals might well be responsible for all terminal operations plus having some sales duties.

Data Analysis

Research questions 1 and 2 were answered by ranking the knowledge and skills areas and the college courses according to the opinions of the respondents. The median response measure was used for ranking. This was appropriate as the data were on the ordinal level (Glass & Hopkins, 1984). Also, a frequency distribution of responses for each knowledge/skills area and each college course was prepared.

As the survey results were reviewed, a categorization of the knowledge and skills areas and college courses of parts 1 and 2 became evident. Some of the knowledge and skills areas and college courses were essentially of human relations and communications material, while others were essentially

quantitative or technical. Still others were a combination of human relations and technical material and could not be considered as essentially one or the other.

Since one purpose of this study was to provide information to aid in the planning, implementation, and evaluation of post-secondary transportation education, the importance of human relations/communications areas and courses relative to technical ones, and of these relative to combination areas and courses was of interest. A pattern in the ranking of human relations/communications, technical, and combination knowledge and skills areas or college courses, as judged by the motor carrier supervisors, might lead transportation decision-makers to certain educational plans, whereas another pattern, or a random relationship, might result in other plans.

Therefore, the knowledge and skills areas and college courses of the survey instrument were categorized as human relations/communications, technical, or combination items. The categorizations were obtained through a consensus opinion of the Department of Transportation and Logistics faculty. Analysis was a review for relevant patterns among the three categories of knowledge and skills areas and college courses.

The categorization of the knowledge and skills areas and college courses was supported by Bedeian and Glueck's (1983) description of management or supervision as the coordination of human and technical resources required to achieve an

organization's goals. They pointed out that organizations generally are composed of both a social and a technical system. The latter includes primarily the equipment, materials, and production resources of the organization operating on mathematical/scientific relationships. The social system is the people who staff the organization operating through human relations (interrelationships). Bedeian and Glueck continued that communication was the vital linking which both allowed and caused success in the social system operations.

The basic technique for answering research question 3 was the chi-square test. More specifically, to answer question 3a, the respondents were placed in four categories according to each supervisor's number of years employment in the motor carrier industry. Categorization was less than 11 years, 11-15 years, 16-20 years, and more than 20 years. Categorization also was by the five Likert responses for each knowledge/skills area and each college course. Chi-square was used to test the proposition that the supervisors came from the same population regardless of their years of experience in motor carrier employment.

For research question 3b, the respondents were placed in four categories according to the size of each supervisor's employer. Size was measured in terms of an employer's annual operating revenue. The categories included annual operating revenues of less than $1 million, $1 million-$5 million, $5

million-$10 million, and more than $10 million. Again, categorization also was by the responses provided by the supervisors. Chi-square was used to test the proposition that the respondents came from the same population regardless of the size of the employer.

To answer research question 3c, categorization of the respondents was by the region in which a supervisor was employed and by responses. Chi-square was used to test the proposition that the respondents came from the same population regardless of the geographic location of their employment.

Research question 3d was answered by placing the respondents in four categories according to their area of responsibility and in one of the five response categories. Chi-square was used to test the proposition that the respondents came from the same population regardless of their area of supervisory responsibility.

In all instances, the 0.05 level was used as the minimum for a significant difference.

CHAPTER IV
PRESENTATION AND ANALYSIS OF THE DATA

Introduction

The primary intent of this study was information sought to aid in the planning, implementation, and evaluation of baccalaureate programs in transportation and logistics. The information of interest was the opinions of motor carrier practitioners employed in the southeastern United States. Their opinions were of selected knowledge and skills areas and college courses relative to job application by recent college graduates.

Also, data were obtained to determine the degree of opinion uniformity by the practitioners across differences in their years of experience in motor carrier operations, in the size of their employers, in their geographical location, and in their area of supervisory responsibility.

The data were obtained through a mailed questionnaire survey. The questionnaires (see Appendix C) were sent to 181 supervisors employed in the southeastern United States by 10 motor carrier firms. Valid questionnaires (at least 90% complete) were received from 106 supervisors (58.6% return rate).

Responding supervisors were employed in all eight of the selected states. The number of participants in each state was as follows: Alabama - 7; Florida - 26; Georgia - 11;

Mississippi - 7; North Carolina - 25; South Carolina - 6; Tennessee - 16; and Virginia - 8. The annual operating revenues of the firms employing the respondents, used to measure the size of a firm, ranged from $500,000 to $119.6 million. The average annual operating revenue was $24.4 million. The number of respondents per firm ranged from 1 to 33; the average number was 10.6. The participants had years of motor carrier experience ranging from 1 to 40, with an average of 17.3.

The minimum number of supervisors providing data was, in one instance, 103. In regard to the other items, 104 supervisors provided data for 5 areas or courses, 105 for 18, and 106 for 59.

Review of Research Questions

The research questions of this study, as presented in Chapter I, are as follows:

1. As perceived by selected motor carrier supervisors, what is the relative importance of certain knowledge and skills areas typically covered in studying for a Bachelor of Business Administration degree with a major in transportation and logistics?

2. As perceived by selected motor carrier supervisors, what is the relative importance of specific business administration or related courses?

3. To what extent are the opinions of the respondents related to the following:

a. the respondent's experiences in the motor carrier industry;

b. the size of a respondent's employer;

c. the geographic location of a supervisor; and

d. the general area of a respondent's responsibility?

Data Relative to the First Research Question

To answer the first research question, the 45 knowledge and skills areas were ranked according to the median responses of the participating supervisors on part 1 of the survey questionnaire. The median measure was used since the data were on the ordinal level. Where ties in the median occurred, the knowledge and skills area with more "important" and fewer "not important" responses was ranked first.

The motor carrier supervisors' opinions of the relative importance of the knowledge and skills areas of this study are presented in Table 2. The knowledge and skills areas are shown in rank order by median responses. They also are categorized as being related to either human relations/communications knowledge and skills areas (H), technical knowledge and skills areas (T), or a combination of human relations/communications and technical knowledge and skills areas (C). Of all 45 knowledge and skills areas, 7 are human relations/communications areas (15.6%), 22 are technical areas (48.9%), and 16 are a combination of human relations/communications and

Table 2

Knowledge and Skills Areas Ranked by Median Response (Md) with Frequency Distribution of Response Percentages

Rank	Area (Category)[a]	n	Md	Frequency Distribution by Percent Responding 5	4	3	2	1
1	Communications-Verbal (H)	106	4.9301	88	11	1	-	-
2	Communications-Written (H)	106	4.8375	75	19	5	1	-
3	Human Relations and Behavior (H)	106	4.7838	70	23	5	2	-
4	Personnel Supervision (H)	105	4.6923	62	28	8	2	-
5	Terminal Management (C)	106	4.6017	56	25	18	1	-
6	Safety Regulations (C)	106	4.4333	48	28	21	3	-
7	Dispatching (C)	105	4.4211	48	18	24	9	1
8	Sales Training (H)	106	4.2297	40	35	21	2	2
9	Labor Relations & Contracts (C)	106	4.1889	37	42	12	7	2
10	Rate Making & Pricing (T)	106	4.0714	36	33	23	5	3
11	Transportation Economics (T)	105	4.0694	35	34	26	5	-
12	Analytical/Quantitative Skills (T)	105	4.0513	33	37	21	5	4
13	Traffic Management (C)	106	4.0385	33	37	26	4	-
14	Transport Law & Regulations (T)	106	4.0250	32	38	24	4	2
15	General Office Skills (C)	106	3.9490	25	46	26	3	-
16	Shipment Costing (T)	106	3.9444	31	34	26	7	2

Table 2 (continued)

Rank	Area (Category)[a]	n	Md	Frequency Distribution by Percent Responding 5	4	3	2	1
17	Dock Operations (C)	105	3.9318	38	32	25	10	6
18	Scheduling (C)	105	3.8816	28	36	27	7	2
19	Document Preparation (T)	106	3.8600	35	24	30	10	1
20	Hazardous Material Regulations (T)	106	3.8462	34	25	25	12	4
21	Claims Analysis (C)	105	3.8125	34	23	34	8	1
22	Computer Operations (T)	106	3.7500	24	34	33	6	3
23	Billing (T)	105	3.6296	27	26	34	10	3
24	Tariffs and Related Publications (T)	106	3.6200	29	24	33	10	4
25	Budget Preparation (T)	106	3.5870	30	22	35	9	4
26	Rate Theory (T)	106	2.5500	14	38	37	6	5
27	Maintenance Management (C)	106	3.5278	17	34	36	12	1
28	Routing (C)	106	3.5000	25	25	36	12	2
29	Carrier Liability & Insurance (T)	106	3.5000	27	23	29	18	3
30	Expediting & Tracing (C)	106	3.4750	24	26	37	9	4
31	Over, Short, & Damaged (T)	105	3.4643	29	19	40	7	5
32	Information Systems (T)	106	3.4333	14	33	42	8	3
33	Materials Handling (C)	106	3.4318	15	32	41	9	3
34	Freight Classification (T)	106	3.3837	24	21	41	9	5

Table 2 (continued)

Rank	Area (Category)[a]	n	Md	Frequency Distribution by Percent Responding 5	4	3	2	1
35	Packing & Packaging (T)	106	3.2692	21	21	37	17	4
36	Typing (T)	103	3.2427	15	24	40	15	6
37	Capital Planning (T)	106	3.2419	18	24	29	25	4
38	Ancillary Services Costing (T)	104	3.1327	12	21	47	15	5
40	Plant/Terminal Location (C)	106	3.0500	13	20	38	22	7
41	Freight Bill Auditing (T)	106	2.9865	12	20	35	24	9
42	Procurement/Purchasing (C)	104	2.9286	10	17	40	27	6
43	Inventory Management (T)	105	2.8788	11	19	31	30	9
44	Foreign Language-Verbal (H)	105	1.2836	1	-	11	24	64
45	Foreign Language-Written (H)	105	1.2647	-	-	10	25	65

[a] Knowledge and skills categories are as follows:

H = Human relations/communications
T = Technical
C = Combination

technical (35.5%). The table also presents a frequency distribution of the supervisors' responses to the 45 knowledge and skills areas. The frequency distribution is in response percentages since, as was noted, there was some small difference in the number of supervisors judging each area.

As can be seen from studying Table 2, five knowledge and skills areas have a median rating of 4.5000 or greater (maximum importance based on the instrument response format). Twenty-four knowledge and skills areas have median responses in the range of 3.5000-4.4999. They are ranked 6-29. Fourteen areas, ranked 30-43, are in the range of 2.5000-3.4999. There are no knowledge and skills areas in the range of 1.5000 -2.4999. Two areas are of minimum importance (ranked 44th and 45th; range 0.0000-1.4999).

The five maximum importance knowledge and skills areas are communications-verbal, communications-written, human relations and behavior, personnel supervision, and terminal management. Each of these areas was rated "extremely important" (5) by more than 50% of the responding supervisors; none was rated as "not at all important" (1). The first four of these five top-ranked knowledge and skills areas are related to human relations/ communications. At rank 5, terminal management is a combination area.

Of the 38 knowledge and skills areas in the 2.5000-4.4999 range, 1 is a human relations/communications area, 22 are technical, and 15 are combination areas. Excepting the

foreign language areas, sales training, at rank 8, is the lowest rated human relations/communications area.

Only two of the knowledge and skills areas were considered by the respondents to be of minimum importance. Foreign language skills, both spoken and written, received "not at all important" ratings of 64% and 65%, respectively. One percent of the respondents rated verbal skills in foreign language as 5 ("extremely important").

Rate making/pricing was, at rank 10, the highest ranked technical knowledge and skills area. Of the 22 technical areas in the 2.5000-4.4999 range, 11 are related primarily to the costs and/or prices of transportation services (ranks 10, 16, 23-26, 29, 34, 37, 38, 41), 8 are related primarily to motor carrier operations (14, 20, 22, 31, 32, 35, 36, 43), and 3 are related to both (11, 12, 19). There appears to be no pattern either among the technical areas nor between them and the human relations/communications or combination areas.

Table 3 is a presentation of the number of human relations/communications and technical knowledge and skills areas ranked by median measure in the top and bottom halves of Table 2. This representation of the data reinforces the significance of human relations/communications knowledge and skills areas in the opinions of the responding motor carrier supervisors. These represented 7 of the 45 knowledge and skills areas, while 22 were technical, and 16 were combination areas. Included within the 22 ranks of the top

Table 3

Number of Human Relations/Communications and Technical Knowledge and Skills Areas in the Top and Bottom Halves of Median Rankings

Type	Total	Number in Top Half	Number in Bottom Half
Human Relations/ Communications	7	5	2
Technical	22	8	14

half of Table 2 were 5 of the 7 human relations/communications areas and 8 of the 22 technical ones. The bottom 23 ranks included 2 human relations/communications and 14 technical areas. Thus, when the knowledge and skills areas are arranged in descending order of importance according to the opinions of the participating supervisors (Table 2), 71.5% of all human relations/communications areas are in the top half of the rankings; 36.4% of the technical areas are. In the lower half there are 28.5% of the human relations/communications areas and 63.6% of the technical ones.

In summary, the motor carrier supervisors responded clearly to the significance of human relations/communications knowledge and skills in motor carrier management, even at the entry level. Of the top 10 ranked knowledge and skills areas (out of 45), 5 were human relations/communications areas (ranks 1-4, 8). These are all of the human relations/communications areas except the two foreign language ones, which were ranked

last. The other top 10 included 4 combination areas (5, 6, 7, 9) and 1 technical one (10). The remaining 35 areas were technical and combination ones (again, excepting the foreign language areas at ranks 44 and 45), with no apparent relationships.

Additional insight into the respondents' judgments may be gained by combining the first two columns of data from Table 2 (maximum importance plus high importance) into a single "important" column, and the last two columns (low importance plus minimum importance) into a "not important" column. This manipulation of the knowledge and skills area data is found in Table 4. The entries are ranked in descending order of "importance."

Again, the significance of human relations/communications is demonstrated. Ninety-nine percent of the responding supervisors rated communications-verbal as "important" (scale rating of 5 and 4). There was not a single rating of "not important" (2 and 1). Communications-written received a 94% "important" rating with 1% responding "not important" (actually a 2 rating).

Communications in foreign languages, both verbal and written, received the opposite ratings. Of the responding supervisors, 88% rated foreign language-verbal as "not important", as did 90% for foreign language-written. There was not a single response indicating writing skills in a foreign language as "important", and only one for verbal ability.

Table 4

Knowledge and Skills Areas Ranked By Percentage of Supervisors Rating "Important" (5 and 4) and "Not Important" (2 and 1)

Rank	Area	Md Rank	Frequency Distribution by Percent Responding[a] Important	Not Important
1	Communications-Verbal	1	99	-
2	Communications-Written	2	94	1
3	Human Relations & Behavior	3	93	2
4	Personnel Supervision	4	90	2
5	Terminal Management	5	81	1
6	Labor Relations & Contracts	9	79	9
7	Safety Regulations	6	76	3
8	Sales Training	8	75	4
9	General Office Skills	15	71	3
10	Traffic Management	13	70	4
11	Transport Law & Regulations	14	70	6
12	Analytical/Quantitative Skills	12	70	9
13	Transportation Economics	11	69	5
14	Rate Making/Pricing	10	69	8
15	Dispatching	7	66	10
16	Shipment Costing	16	65	9
17	Scheduling	18	64	9

Table 4 (continued)

Rank	Area	Md Rank	Frequency Distribution by Percent Responding[a] Important	Not Important
18	Document Preparation	19	59	11
19	Dock Operations	17	59	16
20	Hazardous Material Regulation	20	59	16
21	Computer Operations	22	58	9
22	Claims Analysis	21	57	9
23	Billing	23	53	13
24	Tariffs & Related Publications	24	53	14
25	Rate Theory	26	52	11
26	Budget Preparation	25	52	13
27	Maintenance Management	27	51	13
28	Expediting & Tracing	30	50	13
29	Routing	28	50	14
30	Carrier Liability & Insurance	29	50	11
31	Over, Short, & Damaged	31	48	12
32	Information Systems	32	47	11
33	Materials Handling	33	47	12
34	Freight Classification	34	45	14
35	Packing & Packaging	35	42	21

Table 4 (continued)

Rank	Area	Md Rank	Frequency Distribution by Percent Responding[a] Important	Not Important
36	Capital Planning	37	42	29
37	Typing	36	39	21
38	Ancillary Services Costing	38	33	20
39	Plant/Terminal Location	40	33	29
40	Freight Bill Auditing	41	32	33
41	Intermodal Operations	39	31	21
42	Inventory Management	43	30	39
43	Procurement/Purchasing	42	27	33
44	Foreign Language-Verbal	44	1	88
45	Foreign Language-Written	45	-	90

[a] Percentages will not total 100 because the 3 ratings from the instrument are not included.

Of the 11 knowledge and skills areas comprising the top quartile in Table 4, 5 are human relations/communications areas (ranks 1-4, 8). Five areas are combination ones (5-7, 9, 10), and one (rank 11) is a technical area.

The 23 knowledge and skills areas making up the middle half of Table 4 include only technical and combination areas. There are 15 technical areas (ranks 12-14, 16, 18, 20, 21, 23-26, 30-32, 34), and 8 combination areas (15, 17, 19, 22, 27-29,

33). There appears to be no pattern to the arrangement of these knowledge and skills areas.

The 11 areas of the bottom quartile include 2 human relations/communications areas (ranks 44, 45), 6 technical (35-38, 40, 42), and 3 combination (39, 41, 43). Again, no pattern is apparent.

In summary, the data presented in Table 4 reinforce the analysis of Table 2. The top 10 ranked knowledge and skills areas are all human relations/communications (50%) or combinations (50%). Each of these received an "important" rating (5 and 4) by at least 70% of the respondents. The lowest ranked human relations/communications area (excepting the foreign language entries) was sales training at rank 8. Most of the technical areas were ranked in the lower 35 ranks without apparent pattern.

Data Relative to the Second Research Question

To answer the second research question, the list of 38 college courses were ranked according to the median responses. The ranked college courses are presented in Table 5. Each course is noted as consisting primarily of human relations/communications material (H), technical material (T), or a combination of the two (C). Of the 38 college courses rated by the participating supervisors, 10 are human relations/communications courses (26.3%), 20 are technical (52.6%), and 8 are combination courses (21.1%). In Table 5 also is a

Table 5

College Courses Ranked by Median Response (Md) with Frequency Distribution of Response Percentages

Rank	Area (Category)[a]	n	Md	Frequency Distribution by Percent Responding 5	4	3	2	1
1	Personnel Management (H)	105	4.6923	62	29	7	2	-
2	Business Communications (H)	106	4.5862	55	36	9	-	-
3	Labor-Management Relations (H)	106	4.5364	52	30	13	4	1
4	Terminal Management (C)	106	4.5364	52	28	17	3	-
5	Sales Management (H)	106	4.2895	42	36	20	2	-
6	Management Principles (H)	106	4.2838	42	35	20	2	1
7	Carrier Management (C)	106	4.2105	39	36	21	4	-
8	Carrier Pricing Strategy (T)	106	4.2027	39	35	21	4	1
9	Marketing Principles (H)	104	4.1512	36	41	18	4	1
10	Traffic Management (C)	106	4.0610	33	39	23	5	-
11	Financial Management (T)	106	4.0135	33	35	28	4	-
12	Cost Accounting (T)	106	3.8810	25	40	28	7	-
13	Transport Law & Regulation (T)	106	3.8684	27	36	30	6	1
14	Transportation Economics	106	3.8519	29	32	32	6	1
15	Management Information Systems (T)	106	3.8333	22	42	27	8	1
16	Accounting Principles (T)	104	3.8077	24	37	32	6	1

Table 5 (continued)

Rank	Area (Category)[a]	n	Md	Frequency Distribution by Percent Responding 5	4	3	2	1
17	Production/Operations Management (C)	105	3.7794	27	32	34	6	1
18	Rate Analysis (T)	106	3.6765	22	36	28	12	2
19	Economics Principles (T)	106	3.6765	24	32	31	13	-
20	Corporate Organization/ Control (H)	105	3.5441	19	32	37	11	1
21	Corporate Policy & Strategy (H)	105	3.5417	17	34	37	12	-
22	Business Law (C)	106	3.4243	23	24	33	17	3
23	Physical Distribution Management (T)	104	3.4111	12	23	32	7	4
24	Psychology (H)	106	3.3889	22	24	34	12	8
25	Surface Transportation Modes (C)	106	3.3372	18	25	41	12	4
26	Quantitative Analysis (T)	105	3.3023	14	28	41	14	3
27	Computer Programming (T)	106	3.2333	12	26	43	11	8
28	Statistics (T)	106	3.1667	13	24	39	21	3
29	Purchasing/Materials Management (T)	106	3.1122	9	23	46	17	5
30	Insurance/Risk Management (T)	106	3.0897	14	21	27	24	4
31	Computer Science (T)	106	3.0714	10	26	33	21	10
32	Urban Transportation (C)	106	2.9200	5	18	47	17	13
33	Geography (T)	106	2.8810	11	14	40	22	13

Table 5 (continued)

Rank	Area (Category)[a]	n	Md	Frequency Distribution by Percent Responding 5	4	3	2	1
34	Industrial Engineering (T)	106	2.6429	9	13	33	30	15
35	International Distribution (C)	106	2.5256	4	10	37	32	17
36	Algebra (T)	106	2.2778	4	19	21	26	30
37	Political Science (H)	106	2.0588	1	7	28	32	32
38	Calculus (T)	106	2.0455	3	9	24	31	33

[a] College course categories are as follows:

H = Human relations/communications
T = Technical
C = Combination

frequency distribution of rating responses for each college course by the percentage of supervisors indicating each rating. Percentages were used because of a small variation in the number of supervisors rating the courses.

The first three of the four top-rated courses, those with a median rating of 4.5000 or greater, are human relations/communications courses. Actually, the 10 courses comprising the top quartile, with one exception, all are either human relations/communications courses (rated 1-3, 5, 6, 9) or combination human relations/communications and technical

courses (4, 7, 10). The highest rated technical course is at rank 8.

From rank 11 through 25 there are human relations/communications, technical, and combination courses. Of the lowest-ranked 10 courses (the bottom quartile), 1 is a human relations/communications course (37), 7 are technical (29-31, 33, 34, 36, 38) and 2 are combination courses (32, 35).

The four top-ranked college courses, each with a response median of 4.5000 or more, make up the maximum importance group. They are human relations/communications and combination courses. The courses ranked 5 through 21 (median 3.5000-4.4999) are the high importance courses. They include 5 human relations/communications courses (ranks 5, 6, 9, 20, 21), 9 technical courses (8, 11-16, 18, 19), and 3 combination courses (7, 10, 17). The first two and final two courses of this high importance group are human relations/communications courses. Ranks 11 through 16 are technical courses. Otherwise, no pattern is discernable.

The medium importance group (median range of 2.5000-3.4999) is composed of 14 courses (ranks 22 through 35). Only one of this group of courses is a human relations/communications course (rank 24). Nine of these courses are technical (23, 26-31, 33, 34). The three courses ranked 22, 25, and 32 are combination courses. Again, there is a "string" of six technical courses (26-31) in the midst of this group. Otherwise, there are no apparent patterns.

The final three courses, ranked 36-38, are in the low importance group (response range of 1.5000-2.4999). These courses include one human relations/communications and two technical courses. The respondents placed no college courses within the minimum importance group (median range 0.0000-1.4999). Evidently they as a group perceived any educational endeavor as being of some value.

In Table 6 is presented the number of human relations/communications and technical courses ranked by median measure in the top and bottom halves of Table 5. Of the 38 college courses, 10 are of human relations/communications material, while 20 are of technical, and 8 are combination material. Within the 19 courses making up the top half of Table 5, 6 are human relations/communications and 9 are technical. Sixty percent of all human relations/communications courses are in the upper half of Table 5, while 45% of all technical ones are in the upper half. In the lower half of Table 5, 4 are human relations/communications courses and 11 are technical; a ratio of nearly 3 technical courses for each human relations/communications course.

Table 6

Number of Human Relations and Technical Courses in the Top and Bottom Halves of Median Rankings

Type	Total	Number in Top Half	Number in Bottom Half
Human Relations	10	6	4
Technical	20	9	11

In Table 7, the college courses are ranked according to the combined "important" ratings (5 and 4) and the combined "not important" ratings (2 and 1). Although there are slight shiftings in the rankings relative to Table 5, the general results are the same. The 10 courses of the upper quartile include 6 human relations/communications courses (1-3, 5-7), a technical course (9), and 3 combination courses (4, 8, 10). Of the first eight courses, rated "important" (5 and 4) by at least 75% of the participating supervisors, six are human relations/communications courses.

The highest rated "important" technical course is at the 9th position. Thereafter, the various types of courses appear to be distributed without discernible order until the bottom quartile. Of the bottom 10 courses, 7 are technical, 1 is human relations/communications, and 2 are combination courses.

In summary, the data presented in Tables 5, 6, and 7 demonstrate the premium placed by the participating supervisors upon human relations and communications study. By all presentations and analyses of the data, the human relations/communications courses were judged by the respondents as more important for employment application. As one supervisor commented on his questionnaire:

> In my opinion, the most important knowledge a person should have to quickly become productive in the trucking industry today is how to manage and motivate people. We tend to spend so much time teaching the mechanics of our industry, but fail to teach the student how to manage people. Mechanics don't make the novice productive, people do.

Table 7

College Courses Ranked By Percentage of Supervisors Rating "Important" (5 and 4) and "Not Important" (2 and 1)

Rank	Area	Md Rank	Frequency Distribution by Percent Responding[a] Important	Not Important
1	Personnel Management	1	91	2
2	Business Communications	2	91	-
3	Labor-Management Relations	3	82	5
4	Terminal Management	4	80	3
5	Sales Management	5	78	2
6	Management Principles	6	77	3
7	Marketing Principles	9	77	5
8	Carrier Management	7	75	4
9	Carrier Pricing Strategy	8	74	5
10	Traffic Management	10	72	5
11	Financial Management	11	68	4
12	Cost Accounting	12	65	7
13	Management Information Systems	15	64	9
14	Transport Law & Regulation	13	63	7
15	Transportation Economics	14	61	7
16	Accounting Principles	16	61	7
17	Production/Operations Management	17	59	7

Table 7 (Continued)

Rank	Area	Md Rank	Frequency Distribution by Percent Responding[a] Important	Not Important
18	Rate Analysis	18	58	14
19	Economics Principles	19	56	13
20	Corporate Organization/ Control	20	51	12
21	Corporate Policy & Strategy	21	51	12
22	Business Law	22	47	20
23	Physical Distribution Management	23	46	11
24	Psychology	24	46	20
25	Surface Transportation Modes	25	43	16
26	Quantitative Analysis	26	42	17
27	Computer Programming	27	38	19
28	Statistics	28	37	24
29	Computer Science	31	36	31
30	Insurance/Risk Management	30	35	28
31	Purchasing/Materials Management	29	32	22
32	Geography	33	25	35
33	Urban Transportation	32	23	30
34	Algebra	36	23	56
35	Industrial Engineering	34	22	45

Table 7 (continued)

Rank	Area	Md Rank	Frequency Distribution by Percent Responding[a] Important	Not Important
36	International Distribution	35	14	49
37	Calculus	38	12	64
38	Political Science	37	8	64

[a] Percentages will not total 100 because the 3 ratings from the instrument are not included.

Data Relative to the Third Research Question

To answer the third research question, the responding supervisors were placed into categories related to each respondent's years of motor carrier experience, the size of each respondent's employer (measured in terms of annual operating revenue), the geographical region of each respondent's employment, and the general area of each respondent's supervisory responsibility. For each of the 45 knowledge and skills areas and 38 college courses evaluated by the supervisors, the chi-square statistic was calculated for the categories listed and the five questionnaire responses.

The proposition tested was that the supervisors' opinions of the importance of the selected knowledge and skills areas and college courses were independent of their length of motor carrier experience, the size of their employer, their employment location, or their area of supervisory responsibility. The level of significance was 0.05.

Research Question 3a

For research question 3a, the responding supervisors' ratings were placed into four categories of "years experience in motor carrier operations." The four categories were 1-10 years, 11-15, 16-20, and more than 20 years.

The chi-square statistic for the four categories relative to the five Likert responses of the questionnaire was calculated for each of the 45 knowledge and skills areas and 38 college courses. The objective was to determine whether the responses were influenced by (dependent upon) the number of years of motor carrier experience held by a supervisor. Statistical significance was at the 0.05 level. These data are presented in Table 8.

None of the knowledge and skills areas had a significant chi-square statistic based on years of motor carrier experience; one college course did (psychology). Only for this course could the proposition of independence between the supervisors' years of experience in motor carrier operations and their opinions of the importance of knowledge and skills areas and college courses be rejected. For the 45 knowledge

Table 8

Supervisor Responses Distributed by Years of Motor Carrier Experience with Chi-square Statistic and Probability of Independence

Knowledge/Skills Areas and College Courses	Response Distribution by Years Experience[a] A	B	C	D	Chi square	p[b]
Knowledge/Skills Areas						
Analytical/quantitative skills	24	22	31	26	8.700	0.728
Ancillary services costing	24	22	31	25	8.902	0.711
Billing	23	22	32	26	14.897	0.247
Budget preparation	24	22	32	26	9.273	0.679
Capital planning	24	22	32	26	10.196	0.599
Carrier liability & insurance	24	22	32	26	14.428	0.274
Claims analysis	24	22	31	26	14.567	0.266
Communications-verbal	24	22	32	26	5.055	0.537
Communications-written	24	22	32	26	9.739	0.372
Computer operations	24	22	32	26	6.969	0.860
Dispatching	24	21	32	26	19.210	0.084
Dock operations	24	21	32	25	8.283	0.763
Document preparation	24	22	32	26	12.127	0.436
Expediting & tracing	24	22	32	26	7.153	0.847
Foreign language-verbal	24	22	31	26	7.903	0.544
Foreign language-written	24	22	30	26	5.788	0.447
Freight bill auditing	24	22	32	26	11.707	0.469

Table 8 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Years Experience[a] A	B	C	D	Chi square	p[b]
Freight classification	24	22	32	26	6.379	0.896
General office skills	24	22	32	26	8.048	0.529
Hazardous materials regulations	24	22	32	26	12.635	0.396
Human relations & behavior	24	22	32	26	5.260	0.811
Intermodal operations	23	22	32	26	13.369	0.343
Information systems	24	22	32	26	13.227	0.353
Inventory management	24	22	32	25	11.831	0.459
Labor relations & contracts	24	22	32	26	16.177	0.158
Maintenance management	24	22	32	26	9.468	0.663
Materials handling	24	22	32	26	8.187	0.770
Over, short, & damaged	24	22	32	25	12.652	0.385
Packing & packaging	24	22	32	26	14.171	0.290
Personnel supervision	24	22	32	25	8.073	0.527
Plant/terminal location	24	22	32	26	15.304	0.225
Procurement/purchasing	24	21	31	26	6.890	0.865
Rate making/pricing	24	22	32	26	10.187	0.600
Rate theory	24	22	32	26	17.607	0.128
Routing	24	22	32	26	7.566	0.818
Safety regulations	24	22	32	26	4.555	0.871
Sales training	24	22	32	26	19.401	0.079
Scheduling	24	22	32	25	8.009	0.784

Table 8 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Years Experience[a] A	B	C	D	Chi square	p[b]
Shipment costing	24	22	32	26	14.548	0.267
Tariffs & related publications	24	22	32	26	9.286	0.678
Terminal management	24	22	32	26	7.687	0.566
Traffic management	24	22	32	26	8.734	0.462
Transportation economics	24	21	32	26	12.989	0.163
Transportation law & regulations	24	22	32	26	14.328	0.280
Typing	23	20	32	26	5.170	0.952
<u>College Courses</u>						
Accounting principles	24	20	32	26	6.865	0.866
Algebra	24	22	32	26	14.653	0.261
Business communications	24	22	32	26	12.259	0.056
Business law	24	22	32	26	11.763	0.465
Calculus	24	22	32	26	14.795	0.253
Carrier management	24	22	32	26	7.936	0.541
Carrier pricing strategy	24	22	32	26	9.173	0.688
Computer programming	24	22	32	26	13.506	0.333
Computer science	24	22	32	26	15.566	0.212
Corporate organization/ control	24	22	32	25	13.447	0.337
Corporate policy & strategy	24	22	32	25	12.891	0.168

Table 8 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Years Experience[a] A	B	C	D	Chi square	p[b]
Cost accounting	24	22	32	26	11.806	0.224
Economics principles	24	22	32	26	10.180	0.336
Financial management	24	22	32	26	11.175	0.264
Geography	24	22	32	26	7.891	0.794
Industrial engineering	24	22	32	26	14.901	0.247
Insurance or risk management	24	22	32	26	5.890	0.922
International distribution	24	22	32	26	15.429	0.219
Labor-management relations	24	22	32	26	15.632	0.209
Management information systems	24	22	32	26	7.893	0.793
Management principles	24	22	32	26	9.340	0.674
Marketing principles	23	21	32	26	10.478	0.574
Personnel management	24	22	32	25	8.237	0.510
Physical distribution management	24	22	32	24	14.904	0.247
Political science	24	22	32	26	9.876	0.627
Psychology	24	22	32	26	21.942*	0.038
Production/operations management	24	22	32	25	12.661	0.394
Purchasing/materials management	24	22	32	26	9.575	0.653
Quantitative analysis	23	22	32	26	10.374	0.583
Rate analysis	24	22	32	26	7.238	0.841

Table 8 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Years Experience[a] A	B	C	D	Chi square	p[b]
Sales management	24	22	32	26	15.781	0.072
Statistics	24	22	32	26	7.455	0.826
Surface transportation modes	24	22	32	26	5.408	0.953
Terminal management	24	22	32	26	7.132	0.623
Traffic management	24	22	32	26	7.557	0.579
Transportation economics	24	22	32	26	12.929	0.374
Transport law/ regulation	24	22	32	26	7.532	0.821
Urban transportation	24	22	32	26	9.257	0.681

[a] Column A includes 1-10 years experience; column B, 11-15 years; column C, 16-20 years; and column D, more than 20 years.

[b] Probability of independence between supervisor responses and years of motor carrier experience.

*Chi-square significant at the 0.05 level.

and skills areas and 37 of the college courses (98.8%), the proposition that supervisors' judgment of their importance was independent of motor carrier experience could not be rejected.

There were two knowledge and skills areas and two college courses for which the chi-square values, while technically not significant, were close to the 0.05 level (less than 0.10). The knowledge and skills areas of dispatching and sales

training had probabilities of 0.084 and 0.079, respectively. The college courses of business communications and sales management had probabilities of 0.056 and 0.072, respectively. If these are accepted as quasi-significant, then for 43 knowledge and skills areas (95.6%) and 35 college courses (92.1%), the proposition of independence between supervisors' responses and years of motor carrier experience may not be rejected.

Research Question 3b

For research question 3b, the respondents' ratings were placed into four categories representing different sized motor carrier firms employing the supervisors. Firm size was in terms of annual operating revenues. The four categories were firms with annual operating revenues of less than $1 million, $1 million to $5 million, $5 million to $10 million, and more than $10 million.

The chi-square statistic for the four categories representing employer size relative to the five Likert responses of the questionnaire was calculated for each of the 45 knowledge and skills areas and 38 college courses. The objective was to determine whether the supervisors' responses were independent of the size of their employer. Statistical significance was at the 0.05 level. These data are presented in Table 9.

Table 9

Supervisor Responses Distributed by Employer Size with Chi-square Statistic and Probability of Independence

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Size[a] A	B	C	D	Chi square	p[b]
Knowledge/Skills Areas						
Analytical/quantitative skills	19	33	38	15	10.591	0.564
Ancillary services costing	19	33	37	15	19.855	0.070
Billing	19	32	39	15	15.057	0.238
Budget preparation	19	33	39	15	15.909	0.195
Capital planning	19	33	39	15	19.805	0.071
Carrier liability & insurance	19	33	39	15	20.813	0.053
Claims analysis	19	33	38	15	20.102	0.065
Communications-verbal	19	33	39	15	4.790	0.571
Communications-written	19	33	39	15	6.124	0.727
Computer operations	19	33	39	15	18.754	0.095
Dispatching	19	33	39	14	19.425	0.079
Dock operations	19	33	39	14	37.934*	0.000
Document preparation	19	33	39	15	17.032	0.148
Expediting & tracing	19	33	39	15	15.007	0.241
Foreign language-verbal	18	33	39	15	16.111	0.065
Foreign language-written	18	33	38	15	14.995*	0.020
Freight bill auditing	19	33	39	15	5.959	0.918

Table 9 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Size[a] A	B	C	D	Chi square	p[b]
Freight classification	19	33	39	15	11.356	0.499
General office skills	19	33	39	15	3.377	0.947
Hazardous materials regulations	19	33	39	15	34.543*	0.001
Human relations & behavior	19	33	39	15	13.856	0.128
Intermodal operations	19	33	38	15	16.713	0.161
Information systems	19	33	39	15	9.903	0.624
Inventory management	19	32	39	15	8.318	0.760
Labor relations & contracts	19	33	39	15	12.875	0.378
Maintenance management	19	33	39	15	13.267	0.350
Materials handling	19	33	39	15	19.713	0.073
Over, short, & damaged	18	33	39	15	42.252*	0.000
Packing & packaging	19	33	39	15	35.061*	0.000
Personnel supervision	18	33	39	15	20.702*	0.014
Plant/terminal location	19	33	39	15	9.775	0.636
Procurement/purchasing	19	33	37	15	25.200*	0.014
Rate making/pricing	19	33	39	15	5.747	0.928
Rate theory	19	33	39	15	10.661	0.558
Routing	19	33	39	15	9.654	0.646
Safety regulations	19	33	39	15	9.398	0.401
Sales training	19	33	39	15	14.425	0.174

Table 9 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Size[a] A	B	C	D	Chi square	p[b]
Scheduling	18	33	39	15	14.425	0.274
Shipment costing	19	33	39	15	9.746	0.638
Tariffs & related publications	19	33	39	15	13.071	0.364
Terminal management	19	33	39	15	14.385	0.109
Traffic management	19	33	39	15	13.066	0.160
Transportation economics	19	33	38	15	12.073	0.209
Transportation law & regulations	19	33	39	15	27.175*	0.007
Typing	19	33	38	13	12.649	0.395
<u>College Courses</u>						
Accounting principles	19	33	38	14	17.011	0.149
Algebra	19	33	39	15	14.983	0.242
Business communications	19	33	39	15	5.626	0.466
Business law	19	33	39	15	11.830	0.459
Calculus	19	33	39	15	14.828	0.251
Carrier management	19	33	39	15	6.295	0.710
Carrier pricing strategy	19	33	39	15	16.764	0.159
Computer programming	19	33	39	15	11.221	0.510
Computer science	19	33	39	15	14.854	0.250
Corporate organization/ control	19	32	39	15	9.684	0.644

Table 9 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Size[a] A	B	C	D	Chi square	p[b]
Corporate policy & strategy	19	32	39	15	4.225	0.896
Cost accounting	19	33	39	15	8.166	0.517
Economics principles	19	33	39	15	15.429	0.080
Financial management	19	33	39	15	14.005	0.122
Geography	19	33	39	15	16.124	0.186
Industrial engineering	19	33	39	15	27.993*	0.006
Insurance or risk management	19	33	39	15	13.140	0.359
International distribution	19	33	39	15	13.828	0.312
Labor-management relations	19	33	39	15	12.319	0.420
Management information systems	19	33	39	15	7.802	0.800
Management principles	19	33	39	15	12.330	0.420
Marketing principles	19	33	38	14	7.087	0.852
Personnel management	19	32	39	15	5.577	0.781
Physical distribution management	19	32	38	15	17.247	0.141
Political science	19	33	39	15	14.362	0.278
Psychology	19	33	39	15	11.807	0.461
Production/operations management	19	33	39	14	21.047*	0.050
Purchasing/materials management	19	33	39	15	17.987	0.116

Table 9 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Size[a] A	B	C	D	Chi square	p[b]
Quantitative analysis	19	32	39	15	8.286	0.762
Rate analysis	19	33	39	15	11.407	0.494
Sales management	19	33	39	15	5.821	0.758
Statistics	19	33	39	15	6.524	0.887
Surface transportation modes	19	33	39	15	19.503	0.087
Terminal management	19	33	39	15	10.106	0.342
Traffic management	19	33	39	15	6.096	0.730
Transportation economics	19	33	39	15	7.461	0.826
Transport law/ regulation	19	33	39	15	15.362	0.222
Urban transportation	19	33	39	15	9.271	0.680

[a] Column A includes annual operating revenues of less than $1 million; column B is $1 million to $5 million; column C is $5 million to $10 million; and column D is more than $10 million.

[b] Probability of independence between supervisor responses and size of employer.

*Chi-square significant at the 0.05 level.

Of the knowledge and skills areas, eight (17.8%) had a significant chi-square value beyond the 0.05 level. They were dock operations; foreign language-written; hazardous material regulation; over, short, and damaged; packing and packaging;

personnel supervision; procurement/purchasing; and transportation law and regulation. Two (5.3%) of the college courses (industrial engineering and production/operations management) had significant chi-square values beyond the 0.05 level. For these knowledge and skills areas and college courses, the proposition of independence between the size of supervisors' employers (in terms of annual operating revenues) and responses on the survey instrument could be rejected. For the remaining 37 knowledge and skills areas (82.2%) and 36 college courses (94.7%), the proposition of independence between employer size and supervisors' opinions could not be rejected.

There were eight knowledge and skills areas with chi-square values which might be considered quasi-significant (less than 0.10 probabilities). These were ancillary services costing, capital planning, carrier liability and insurance, claims analysis, computer operations, dispatching, foreign language-verbal, and materials handling. Two college courses, economics principles and surface transportation modes, also had probabilities in this range. These areas and courses, taken with the previously indicated significant chi-square values, resulted in 29 knowledge and skills areas (64.4%) and 34 college courses (89.5%) for which the proposition of independence between employer size and supervisors' responses could not be rejected.

Research Question 3c

To analyze the data relative to research question 3c, the respondents were placed into four geographical regions. The four regions were selected to obtain as much balance among the number of supervisors in each one as geographical logic would permit. The selected regions were as follows: Alabama, Georgia, Mississippi; Florida; North Carolina; and South Carolina, Tennessee, and Virginia.

The chi-square statistic for the four regions relative to the five Likert responses of the questionnaire was calculated for each of the 45 knowledge and skills areas and 38 college courses. The objective was to determine whether the supervisors' responses were influenced by their employment locale. Statistical significance was at the 0.05 level. These data are presented in Table 10.

Only two of the knowledge and skills areas (hazardous material regulation and packing and packaging) and one college course (marketing principles) had chi-square values that were significant beyond the 0.05 level. For these, the proposition of independence between employment location and opinion of the importance of knowledge and skills areas and college courses could be rejected. For the other 43 knowledge and skills areas (95.6%) and 37 college courses (97.4%), the proposition that a supervisor's opinion was independent of his or her geographical location could not be rejected.

Table 10

Supervisor Responses Distributed by Employment Location with Chi-square Statistic and Probability of Independence

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Location[a] A	B	C	D	Chi square	p[b]
Knowledge/Skills Areas						
Analytical/quantitative skills	25	27	24	29	13.225	0.353
Ancillary services costing	25	27	25	27	6.223	0.904
Billing	24	27	25	29	14.319	0.281
Budget preparation	25	27	25	29	13.973	0.302
Capital planning	25	27	25	29	14.668	0.260
Carrier liability & insurance	25	27	25	29	7.518	0.822
Claims analysis	25	27	24	29	11.820	0.460
Communications-verbal	25	27	25	29	3.659	0.723
Communications-written	25	27	25	29	12.956	0.165
Computer operations	25	27	25	29	3.413	0.992
Dispatching	24	27	25	29	9.681	0.644
Dock operations	24	27	25	29	7.717	0.807
Document preparation	25	27	25	29	8.904	0.711
Expediting & tracing	25	27	25	29	19.413	0.079
Foreign language-verbal	25	26	25	29	5.636	0.779
Foreign language-written	25	26	25	28	3.471	0.748
Freight bill auditing	25	27	25	29	16.406	0.173

Table 10 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Location[a] A	B	C	D	Chi square	p[b]
Freight classification	25	27	25	29	8.863	0.715
General office skills	25	27	25	29	7.311	0.605
Hazardous materials regulations	25	27	25	29	31.668*	0.002
Human relations & behavior	25	27	25	29	10.237	0.332
Intermodal operations	25	27	24	29	9.912	0.624
Information systems	25	27	25	29	6.907	0.864
Inventory management	25	26	25	29	10.469	0.575
Labor relations & contracts	25	27	25	29	9.302	0.677
Maintenance management	25	27	25	29	14.566	0.266
Materials handling	25	27	25	29	13.001	0.369
Over, short, & damaged	25	26	25	29	5.042	0.957
Packing & packaging	25	27	25	29	23.107*	0.027
Personnel supervision	25	26	25	29	7.865	0.548
Plant/terminal location	25	27	25	29	6.856	0.867
Procurement/purchasing	25	27	25	27	11.027	0.527
Rate making/pricing	25	27	25	29	10.536	0.569
Rate theory	25	27	25	29	13.158	0.358
Routing	25	27	25	29	13.268	0.350
Safety regulations	25	27	25	29	8.165	0.518
Sales training	25	27	25	29	12.618	0.397

Table 10 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Location[a] A	B	C	D	Chi square	p[b]
Scheduling	25	26	25	29	15.610	0.210
Shipment costing	25	27	25	29	13.717	0.319
Tariffs & related publications	25	27	25	29	9.731	0.640
Terminal management	25	27	25	29	5.101	0.825
Traffic management	25	27	25	29	8.318	0.502
Transportation economics	25	27	25	28	10.053	0.346
Transportation law & regulations	25	27	25	29	8.112	0.776
Typing	25	27	25	26	14.954	0.244
College Courses						
Accounting principles	25	27	24	28	10.854	0.541
Algebra	25	27	25	29	9.445	0.665
Business communications	25	27	25	29	8.414	0.209
Business law	25	27	25	29	16.066	0.188
Calculus	25	27	25	29	16.843	0.156
Carrier management	25	27	25	29	9.238	0.416
Carrier pricing strategy	25	27	25	29	13.130	0.360
Computer programming	25	27	25	29	3.864	0.986
Computer science	25	27	25	29	9.430	0.666
Corporate organization/ control	25	26	25	29	8.981	0.705

Table 10 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Location[a] A	B	C	D	Chi square	p[b]
Corporate policy & strategy	25	26	25	29	5.855	0.754
Cost accounting	25	27	25	29	4.715	0.858
Economics principles	25	27	25	29	6.911	0.646
Financial management	25	27	25	29	4.270	0.893
Geography	25	27	25	29	10.963	0.532
Industrial engineering	25	27	25	29	8.675	0.730
Insurance or risk management	25	27	25	29	9.506	0.659
International distribution	25	27	25	29	10.014	0.615
Labor-management relations	25	27	25	29	14.241	0.286
Management information systems	25	27	25	29	16.076	0.188
Management principles	25	27	25	29	14.114	0.294
Marketing principles	25	27	25	27	23.726*	0.022
Personnel management	24	27	25	29	11.214	0.261
Physical distribution management	24	27	24	29	8.860	0.715
Political science	25	27	25	29	12.755	0.387
Psychology	25	27	25	29	9.855	0.629
Production/operations management	25	26	25	29	4.785	0.965
Purchasing/materials management	25	27	25	29	11.167	0.515

Table 10 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Employer Location A	B	C	D	Chi square	p
Quantitative analysis	24	27	25	29	8.758	0.723
Rate analysis	25	27	25	27	8.740	0.725
Sales management	25	27	25	29	7.811	0.553
Statistics	25	27	25	29	17.257	0.140
Surface transportation modes	25	27	25	29	5.972	0.918
Terminal management	25	27	25	29	5.023	0.832
Traffic management	25	27	25	29	8.088	0.525
Transportation economics	25	27	25	29	9.378	0.670
Transport law/ regulation	25	27	25	29	10.435	0.578
Urban transportation	25	27	25	29	14.597	0.264

[a] Column A includes supervisors employed in Alabama, Georgia, and Mississippi; Column B those in Florida; Column C those in North Carolina; and Column D those in South Carolina, Tennessee, and Virginia.

[b] Probability of independence between supervisor responses and location of employment.

*Chi-square significant at the 0.05 level.

One knowledge and skills area had a quasi-significant chi-square value--expediting and tracing. None of the college courses were in this range. With expediting and tracing

included, for 42 knowledge and skills areas (93.3%) the proposition of independence could not be rejected.

Research Question 3d

For research question 3d, the respondents' ratings were placed into four categories related to the areas of supervisory responsibility. The four categories were Operations-Terminal, Operations-Other, Marketing-Sales, and Marketing-Other. These categories were based upon information supplied on the survey instrument.

The chi-square statistic for the four categories relative to the five Likert responses of the questionnaire was calculated for each of the 45 knowledge and skills areas and 38 college courses. The objective was to determine whether the respondents' responses were influenced by their supervisory responsibilities. Statistical significance was at the 0.05 level. These data are presented in Table 11.

Of the knowledge and skills areas, six had significant chi-square values (13.3%), while two college courses did (5.1%). The six knowledge and skills areas were carrier liability and insurance, hazardous material regulation, labor relations and contracts, maintenance management, personnel supervision, and procurement/purchasing. The two college courses were calculus and urban transportation. For these knowledge and skills areas and college courses the proposition of independence between areas of supervisory responsibility and supervisors' opinions of the importance of knowledge and skills

Table 11

Supervisor Responses Distributed by Respondents' Responsibility with Chi-square Statistic and Probability of Independence

Knowledge/Skills Areas and College Courses	Response Distribution by Responsibility[a] A	B	C	D	Chi square	p[b]
Knowledge/Skills Areas						
Analytical/quantitative skills	31	36	16	21	12.912	0.375
Ancillary services costing	31	35	16	21	15.957	0.193
Billing	31	35	17	21	19.670	0.074
Budget preparation	31	36	17	21	12.469	0.409
Capital planning	31	36	17	21	9.838	0.630
Carrier liability & insurance	31	36	17	21	23.172*	0.026
Claims analysis	31	36	16	21	19.638	0.074
Communications-verbal	31	36	17	21	9.873	0.130
Communications-written	31	36	17	21	10.285	0.328
Computer operations	31	36	17	21	8.742	0.725
Dispatching	31	35	17	21	16.894	0.154
Dock operations	31	35	17	21	13.758	0.316
Document preparation	31	36	17	21	20.339	0.061
Expediting & tracing	31	36	17	21	12.388	0.415
Foreign language-verbal	30	36	17	21	6.536	0.685
Foreign language-written	30	35	17	21	2.160	0.904
Freight bill auditing	31	36	17	21	13.053	0.365

Table 11 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Responsibility[a] A	B	C	D	Chi square	p[b]
Freight classification	31	36	17	21	16.322	0.177
General office skills	31	36	17	21	14.258	0.110
Hazardous materials regulations	31	36	17	21	28.619*	0.004
Human relations & behavior	31	36	17	21	15.951	0.068
Intermodal operations	30	36	17	21	5.136	0.953
Information systems	31	36	17	21	12.752	0.387
Inventory management	30	36	17	21	20.829	0.053
Labor relations & contracts	31	36	17	21	28.065*	0.005
Maintenance management	31	36	17	21	26.964*	0.008
Materials handling	31	36	17	21	14.766	0.154
Over, short, & damaged	31	36	16	21	9.861	0.628
Packing & packaging	31	36	17	21	14.903	0.247
Personnel supervision	31	36	16	21	17.651*	0.039
Plant/terminal location	31	36	17	21	9.261	0.681
Procurement/purchasing	31	34	17	21	25.036*	0.015
Rate making/pricing	31	36	17	21	20.456	0.059
Rate theory	31	36	17	21	10.144	0.603
Routing	31	36	17	21	12.427	0.412
Safety regulations	31	36	17	21	11.495	0.243
Sales training	31	36	17	21	18.749	0.095

Table 11 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Responsibility[a] A	B	C	D	Chi square	p[b]
Scheduling	31	36	16	21	17.285	0.139
Shipment costing	31	36	17	21	15.406	0.220
Tariffs & related publications	31	36	17	21	12.092	0.439
Terminal management	31	36	17	21	16.214	0.063
Traffic management	31	36	17	21	6.813	0.657
Transportation economics	31	36	16	21	7.521	0.583
Transportation law & regulations	31	36	17	21	8.488	0.746
Typing	29	36	16	21	12.643	0.396
<u>College Courses</u>						
Accounting principles	31	34	17	21	9.869	0.627
Algebra	31	36	17	21	11.921	0.452
Business communications	31	36	17	21	9.110	0.167
Business law	31	36	17	21	12.513	0.405
Calculus	31	36	17	21	23.412*	0.024
Carrier management	31	36	17	21	9.683	0.240
Carrier pricing strategy	31	36	17	21	15.024	0.240
Computer programming	31	36	17	21	13.090	0.363
Computer science	31	36	17	21	12.329	0.420
Corporate organization/ control	30	36	17	21	10.328	0.587

Table 11 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Responsibility[a] A	B	C	D	Chi square	p[b]
Corporate policy & strategy	30	36	17	21	14.906	0.094
Cost accounting	31	36	17	21	8.115	0.523
Economics principles	31	36	17	21	10.847	0.286
Financial management	31	36	17	21	10.753	0.293
Geography	31	36	17	21	20.398	0.060
Industrial engineering	31	36	17	21	9.904	0.624
Insurance or risk management	31	36	17	21	13.596	0.327
International distribution	31	36	17	21	12.283	0.423
Labor-management relations	31	36	17	21	18.004	0.116
Management information systems	31	36	17	21	9.585	0.652
Management principles	31	36	17	21	15.685	0.206
Marketing principles	30	36	16	21	10.732	0.552
Personnel management	31	36	17	21	5.700	0.770
Physical distribution management	30	36	16	21	14.505	0.270
Political science	31	36	17	21	15.350	0.223
Psychology	31	36	17	21	9.778	0.635
Production/operations management	31	36	17	20	16.684	0.162
Purchasing/materials management	31	36	17	21	14.017	0.300

Table 11 (continued)

Knowledge/Skills Areas and College Courses	Response Distribution by Responsibility[a] A	B	C	D	Chi square	p[b]
Quantitative analysis	31	35	17	21	10.171	0.601
Rate analysis	31	36	17	21	15.679	0.206
Sales management	31	36	17	21	7.306	0.605
Statistics	31	36	17	21	19.739	0.072
Surface transportation modes	31	36	17	21	9.062	0.698
Terminal management	31	36	17	21	10.285	0.328
Traffic management	31	36	17	21	5.584	0.781
Transportation economics	31	36	17	21	12.852	0.380
Transport law/ regulation	31	36	17	21	12.450	0.410
Urban transportation	31	36	17	21	25.200*	0.014

[a] Column A includes responses of supervisors in Operations-Terminal; column B of supervisors in Operations-Other; column C, in Marketing-Sales; and column D, Marketing-Other.

[b] Probability of independence between supervisor responses and area of supervisor responsibility.

*Chi-square significant at the 0.05 level.

areas and college courses could be rejected. For the other 39 knowledge and skills areas (86.7%) and 36 college courses (94.7%), the proposition of independence could not be rejected.

Relative to supervisor responsibility, eight knowledge and skills areas had chi-square values in the quasi-significant

range. These were billing, claims analysis, document preparation, human relations and behavior, inventory management, rate making/pricing, sales training, and terminal management. Three college courses--corporate policy and strategy, geography, and statistics--also had chi-square values in the range. With these items included, the proposition of independence between supervisor responsibility and responses for 31 knowledge and skills areas (68.9%) and 33 college courses (86.8%) could not be rejected.

Summary for the Data Relative to the Third Research Question

In summary, of the 332 chi-square statistics calculated, 22 (6.6%) were significant beyond the 0.05 level. For 310 of the 332 supervisor judgments (93.4%), the proposition that those judgments were independent of supervisor experience, employer size, employment location, or responsibility could not be rejected.

CHAPTER V
SUMMARY, CONCLUSIONS, AND APPLICATION

Summary

The basic focus of the study was on answers to the following questions:

1. As perceived by selected motor carrier supervisors, what is the relative importance of certain knowledge and skills areas typically covered in studying for a Bachelor of Business Administration degree with a major in transportation and logistics?

2. As perceived by selected motor carrier supervisors, what is the relative importance of specific business administration or related courses?

3. To what extent are the opinions of the respondents related to the following:

   a. the respondent's experience in the motor carrier industry;

   b. the size of a respondent's employer;

   c. the geographic location of a supervisor; and

   d. the general area of a respondent's responsibility?

The study began with a literature review covering three areas. These were planning and needs assessment in higher education, planning and needs assessment as a basis for transportation education, and surveys and business-related educational planning. In the first area of the literature review, the importance of planning for business college

programs based upon the needs of industry was established. In the second area, it was demonstrated that, although needs-based planning in transportation was widely supported, it seldom was carried out. Finally, through the review of the third area, the use of the questionnaire survey in obtaining information of the type in this study was justified.

The field work of this study was a mailed questionnaire survey of motor carrier supervisors working in the southeastern United States. The questionnaire was in three parts. In part 1, the respondents' opinions of the importance of selected areas of knowledge and skills relative to requirements for entry-level management trainees was sought. The knowledge and skills areas were developed through the literature review and input from the Department of Transportation and Logistics, University of North Florida, faculty. Part 2 of the questionnaire sought the same information about selected college courses. Selection was by the same process as for part 1. Thus, in parts 1 and 2, the respondents were asked to evaluate 45 knowledge and skills areas and 38 college courses. Their opinions were indicated on a 5-point Likert scale (5 = extremely important, 1 = not at all important). In part 3, the demographic information needed to answer research question 3 was sought. The questionnaire was field tested using Department of Transportation and Logistics, University of North Florida, alumni.

Selection of the supervisor respondents began with the identification of 46 motor carrier firms operating within the southeastern United States. Identification was through a review of Moody's Transportation Manual (1984). The presidents of the 46 firms were requested to provide the names and addresses of supervisors and mid-managers employed by their firms in any of the identified states. Such lists were received from 10 presidents. From these lists, 181 supervisors were asked to participate in the study.

Valid questionnaires (at least 90% complete) were received from 106 supervisors (58.6% return rate). To answer research question 1, the supervisors' median response for each knowledge and skills area was calculated. The areas were ranked in order of importance by the median response. A frequency distribution of the Likert scale responses for each knowledge and skills area also was presented. Frequencies were in percentages of responding supervisors. Research question 2 (related to the college courses) was answered similarly.

For research question 3, the responses were categorized according to the supervisors' years of motor carrier experience (research question 3a), the size of the supervisors' employer (research question 3b), the geographical location of the supervisors' employment (research question 3c), and the general area of the supervisors' responsibility (research question 3d). The basic intent of research question 3 was to determine if the supervisors' opinions were independent of their experience,

employer size, location, or area of responsibility. The chi-square test was used to answer research question 3, with the 0.05 level being the minimum for significance.

In reviewing the data for research questions 1 and 2, it was recognized that the knowledge and skills areas and college courses fell into categories of essentially human relations/communications, technical, or combination material. Since the respondents' opinions of the knowledge and skills areas and college courses relative to such a categorization could be important to the planning, implementation, and evaluation of a transportation education program, the data analysis was extended to include this.

Research Question 1 Results

The 45 knowledge and skills areas included 7 of essentially human relations/communications material, 22 of technical, and 16 of combination material. When ranked in decreasing order of importance by the median response measure, the upper quartile included five of the seven human relations/communications areas. The remaining two--foreign language-verbal and foreign language-written--were ranked 44th and 45th. If these areas were excluded, then all human relations/communications areas were within the upper quartile, and four of the five were the four top ranked areas (the fifth was rank 8). The low ranking of foreign language communications is understandable since motor carrier operations, by their nature, place severe limitations on international activities. Carrier

personnel dealing in international operations are most likely to interact with local shippers' agents. The only technical areas in the upper quartile were at ranks 10 and 11. The remaining three-fourths of the knowledge and skills areas, excepting the final two, were an apparently random sequence of technical and combination areas.

Research Question 2 Results

Of the 38 college courses, 10 were of essentially human relations/communications material, 20 of technical material, and 8 of combination material. Six of the human relations/communications courses were in the upper quartile when all college courses were ranked in decreasing order of importance as measured by the median responses. The other upper quartile courses were one technical and two combination ones. The remainder of the college course rankings were without apparent order.

Research Question 3 Results

For research question 3, the supervisors' responses were categorized by years of motor carrier experience, employer size, regional location of employment, and area of supervisory responsibility. The chi-square statistic was used to test the proposition that the supervisors' responses were independent of their years of motor carrier experience, employer size, location of employment, and supervisory responsibility. The minimum level for significance was 0.05.

Only one college course had a significant chi-square relative to years of motor carrier experience. None of the knowledge and skills areas did. Thus, for 100% of the knowledge and skills areas and 98.8% of the college courses, the proposition of independence between supervisors' opinions and years of motor carrier experience could not be rejected.

Relative to the size of the supervisors' employers, there were significant differences relative to eight knowledge and skills areas and two college courses. For the remaining 82.2% of the knowledge and skills areas and 94.7% of the college courses, the proposition of employer size and supervisor opinion independence could not be rejected.

Two knowledge and skills areas and one college course had significant chi-square values relative to the regional location of the supervisors' employment. Thus, the proposition of independence between employment location and supervisors' responses could not be rejected for 95.6% of the knowledge and skills areas and 97.4% of the college courses.

In regard to supervisor responsibility, there were six knowledge and skills areas and two college courses where a significant difference was found. Thus, for 86.7% of the knowledge and skills areas and 94.7% of the college courses, the proposition of supervisor responsibility and response independence could not be rejected.

In all, there were 332 chi-square statistics calculated. Twenty-two of them were significant beyond the 0.05 level.

Therefore, for 93.4% of the supervisor responses, the proposition of independence between opinions and supervisor experience, employer size, employment location, or supervisor responsibility could not be rejected.

Conclusions

It was the three research questions which provided operational direction for this investigation. In regard to the first research question, concerning the relative importance of certain areas of knowledge and skills for majors in transportation and logistics, it must be concluded that the responding motor carrier managers and supervisors placed higher priority on areas of human relations and communications. Support for this conclusion can be found in the fact that of the 45 specified knowledge and skills areas, 5 of the 7 human relations and communications areas were among the top 10 ranked areas. The first four ranked areas all were human relations and communications. This is not to say that the respondents decried the technical and combination areas. However, the human relations and communications areas were the most highly rated.

In regard to the second research question about the relative importance of specific business administration and related courses, it must be concluded that the highest priority was given to those courses dealing primarily in human relations and communications material. Specifically, support for this

conclusion can be found in the respondents' rating 6 of the 10 human relations and communications courses among the top 10 of all college courses. As with the knowledge and skills areas, the respondents recognized the importance of courses dealing in technical and combination material. But also as with the knowledge and skills areas, the human relations and communications material courses were consistently the most highly rated.

In regard to the third research question, there was both consensus among the supervisor respondents and independence between their judgments and their experience, employer size, location, and responsibility. Of the 332 total opinions expressed by the responding supervisors, only 22 (6.6%) had a significant chi-square. For those items only could the proposition that opinions of item importance were independent of the supervisors' experience, employer size, location, or responsibility be rejected. Thus, educational planners seeking similar data in the future should be able to accept safely the opinions of motor carrier representatives easily available; i.e., with limited experience, employed by large or small firms, working in the immediate vicinity, or employed in any supervisory capacity.

Application

In Chapter I it was stated that the two-fold purpose of this study was to provide information to aid in the planning,

implementation, and evaluation of post-secondary transportation education and for guidance in related future research. The primary application of the data and analyses of this study, then, would be their employment in planning, implementing, and evaluating baccalaureate programs in transportation and logistics, and in other areas of business administration study as relevant. Such employment should include increased attention to areas of human relations and communications, especially in advanced studies. The supervisors' emphasis on human relations/communications areas and courses at least implies a perceived deficiency among current entry-level employees. Perhaps too many business education program planners are relying on freshman and sophomore general education and introductory management courses for both foundation and complete human relations and communications study. Application of the results of this study should be achieved not only through the continuance of human relations and communications material in transportation and business programs, but through their emphasis.

A second application of the findings of this study should be their confirmation and reconfirmation through the active development of educational planner/industry supervisor interrelationships. Both education and industry are dynamic enterprises, subject to continuous change. Changes in the attitudes, environments, goals, personnel, and resources will impact employer needs. In planning and evaluation of

transportation and related studies particularly, cognizance of such changes and their import is critical to need satisfying educational programs.

A logical extension of the second application is that research similar to that of this study be extended to include modes of transportation other than motor carriers, as well as other geographical areas and levels of management. The personnel of firms engaged in logistical responsibilities beyond transportation also should be researched.

In order to enhance the educational planner/industry supervisor interrelationships, a local transportation advisory council or committee should be established and actively maintained. Halloran (1982) demonstrated that such a group was a viable source of information on the community college level. The findings of this study support those of Halloran and extend them through the baccalaureate level. The confirmation and reconfirmation of the second application would serve to validate an advisory council's actions.

APPENDICES

APPENDIX A
COVER LETTER TO MOTOR CARRIER PRESIDENTS

January 30, 1986

Mr. Robert C. Jones
President
Dropitall Motor Freight, Inc.
1234 Lost Lane
Roundabout, FL 32267

Dear Mr. Jones:

We are attempting to make transportation curricula more responsive to industry needs.

Critical to this effort is information from the motor carrier industry about expectations of newly hired college graduates. Thus, we wish to secure from managers most likely to supervise newly hired graduates their opinions of the knowledge and skills these "new hires" should possess.

Your help is requested in a simple but critical form. We need the names and business addresses of managers within your firm known to, or most likely to, supervise recent college graduates in entry-level positions.

Since the study is confined to the Southeast, would you please have your personnel manager provide us the names and addresses of up to ten managers (or more) whom you employ, if you do, in each of the following states: Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and/or Virginia. Also, please suggest that as broad

a representation of supervisory responsibilities as possible be included--managers in operations, marketing, auditing, billing, etc.--anywhere a new graduate might be employed. We will contact these potential respondents by mail, explaining the purpose and procedures of the study, and providing each with a questionnaire.

Enclosed for your information is a copy of the cover letter and questionnaire to be mailed to your employees. Aside from very limited personal and demographic data, the information requested is about transportation education. All information received will be held in strictest confidence. Completion of the questionnaire should require no more than twenty minutes.

Also enclosed is a return-addressed, post-paid envelope for convenience in mailing the requested names and addresses. And you will find a postcard upon which you may indicate whether or not your firm will be able to participate in this survey. On the same postcard, you also may request a summary of our findings, which we will be glad to share.

Thank you for your attention to this request. We are looking forward to your response.

Sincerely,

Donald K. Graham
Project Director

DKG/jrw
Enclosure

APPENDIX B
COVER LETTER TO RECOMMENDED SUPERVISORS

February 15, 1986

Ms. Juanita O'Malley
District Manager - MSM
Dropitall Motor Freight, Inc.
5678 Cantfind Blvd., Suite 9
Inandout City, TN 56732

Dear Ms. O'Malley:

We at the University of North Florida are trying to make transportation education more reflective of carrier needs. To accomplish this we need information which you best can supply.

You have been identified by the management of Dropitall Motor Freight as possibly having experience and responsibility important to transportation education. We are asking for your opinions regarding the knowledge and skills a person with a new degree in business administration should have to quickly become productive, and college courses you feel they should have completed.

Your completion of the enclosed questionnaire will contribute significantly to the success of our study. The questions deal only with your opinions; there are no right or wrong answers. Anything you indicate or say will be held in strictest confidence. Your responses will in no way be identified with you or your employer.

Completion of the questionnaire should require about 10 minutes. A stamped, return-addressed envelope also is enclosed for your convenience. Please place the completed questionnaire AND this letter in the envelope and mail both to the University of North Florida.

Your participation and the form's prompt return both are appreciated. If you would like a summary of our findings, just write "Summary" at the top of this letter. And thank you!

Sincerely,

Donald K. Graham
Project Director

DKG/jrw
Enclosure

APPENDIX C
QUESTIONNAIRE

TRANSPORTATION EDUCATION SURVEY

Department of Transportation & Logistics
University of North Florida
4567 St. John's Bluff Road, S.
Jacksonville, FL 32216
(904) 646-2860

PART I: SKILLS AND KNOWLEDGE AREAS (Please circle one number, as you feel appropriate, for each item)

	Extremely Important				Not At All Important
Analytical/quantitative skills	5	4	3	2	1
Ancillary services costing	5	4	3	2	1
Billing	5	4	3	2	1
Budget preparation	5	4	3	2	1
Capital planning	5	4	3	2	1
Carrier liability & insurance	5	4	3	2	1
Claims analysis	5	4	3	2	1
Communications - verbal	5	4	3	2	1
Communications - written	5	4	3	2	1
Computer operations	5	4	3	2	1
Computer programming	5	4	3	2	1
Dispatching	5	4	3	2	1
Dock operations	5	4	3	2	1
Document preparation	5	4	3	2	1
Expediting & tracing	5	4	3	2	1
Foreign language - verbal	5	4	3	2	1
Foreign language - written	5	4	3	2	1

PART I: SKILLS AND KNOWLEDGE AREAS (Continued)

	Extremely Important				Not At All Important
Freight bill auditing	5	4	3	2	1
Freight classification	5	4	3	2	1
General office skills	5	4	3	2	1
Hazardous materials regulations	5	4	3	2	1
Human relations & behavior	5	4	3	2	1
Intermodal operations	5	4	3	2	1
Information systems	5	4	3	2	1
Inventory management	5	4	3	2	1
Labor relations & contracts	5	4	3	2	1
Maintenance management	5	4	3	2	1
Materials handling	5	4	3	2	1
Over, short, & damaged	5	4	3	2	1
Packing & packaging	5	4	3	2	1
Personnel supervision	5	4	3	2	1
Plant/terminal location	5	4	3	2	1
Procurement/purchasing	5	4	3	2	1
Rate making/pricing	5	4	3	2	1
Rate theory	5	4	3	2	1
Routing	5	4	3	2	1
Safety regulations	5	4	3	2	1
Sales training	5	4	3	2	1
Scheduling	5	4	3	2	1
Shipment costing	5	4	3	2	1

PART I: SKILLS AND KNOWLEDGE AREAS (Continued)

	Extremely Important				Not At All Important
Tariffs & related publications	5	4	3	2	1
Terminal management	5	4	3	2	1
Traffic management	5	4	3	2	1
Transportation economics	5	4	3	2	1
Transport law & regulations	5	4	3	2	1
Typing	5	4	3	2	1

Please use the remainder of this page, and the back if necessary, to add other skills and knowledge areas you feel are important, or any comments you may have about this part of the survey. If you add any skills or knowledge areas, please rank each one on a 1-5 scale as above. Then go to Part 2 of the survey on the following page.

TRANSPORTATION EDUCATION SURVEY

PART 2: COLLEGE COURSES (Please circle one number, as you feel appropriate, for each item)

	Extremely Important				Not At All Important
Accounting principles	5	4	3	2	1
Algebra	5	4	3	2	1
Business communications	5	4	3	2	1
Business law	5	4	3	2	1
Calculus	5	4	3	2	1
Carrier management	5	4	3	2	1
Carrier pricing strategy	5	4	3	2	1
Computer programming	5	4	3	2	1
Computer science	5	4	3	2	1
Corporate organization/control	5	4	3	2	1
Corporate policy & strategy	5	4	3	2	1
Cost accounting	5	4	3	2	1
Economics principles	5	4	3	2	1
Financial management	5	4	3	2	1
Geography	5	4	3	2	1
Industrial engineering	5	4	3	2	1
Insurance or risk management	5	4	3	2	1
International distribution	5	4	3	2	1
Labor-management relations	5	4	3	2	1
Management information systems	5	4	3	2	1
Management principles	5	4	3	2	1
Marketing principles	5	4	3	2	1

PART 2: COLLEGE COURSES (continued)

	Extremely Important				Not At All Important
Personnel management	5	4	3	2	1
Physical distribution management	5	4	3	2	1
Political science	5	4	3	2	1
Psychology	5	4	3	2	1
Production/operations management	5	4	3	2	1
Purchasing/materials management	5	4	3	2	1
Quantitative analysis	5	4	3	2	1
Rate analysis	5	4	3	2	1
Sales management	5	4	3	2	1
Statistics	5	4	3	2	1
Surface transportation modes	5	4	3	2	1
Terminal management	5	4	3	2	1
Traffic management	5	4	3	2	1
Transportation economics	5	4	3	2	1
Transport law & regulation	5	4	3	2	1
Urban transportation	5	4	3	2	1

Please add on the back of this page other college courses you feel are important, or any comments you may have about this part of the survey. If you add any college courses, please rank each one on a 1-5 scale as above. Then go on to Part 3 of the survey on the following page.

TRANSPORTATION EDUCATION SURVEY

PART 3: SOME QUICK INFORMATION ABOUT YOU The following data are to aid in categorizing and analyzing the information you and other motor carrier supervisors and managers have provided.

1. Please indicate the state in which you currently are employed. (Check one)

____ Alabama ____ Mississippi ____ Tennessee

____ Florida ____ North Carolina ____ Virginia

____ Georgia ____ South Carolina

2. Which of the following best describes your current employment responsibility? (Check one)

Operations: ____ Maintenance ____ Road ____ Safety

____ Terminal ____ Other - Please describe briefly _____

_____

_____

Marketing: ____ Sales ____ Traffic ____ Other - Please describe briefly _____

_____

_____

3. Please write in the approximate number of years you have been employed in the motor carrier industry.

_____

You now have completed the Transportation Education Survey. Thank you for your time, your thoughts, and your efforts. Please place the completed questionnaire AND its cover letter in the stamped, return-addressed envelope and mail both to the University of North Florida. And again, thank YOU!

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BIOGRAPHICAL SKETCH

Donald K. Graham was born and raised in Houston, Texas. He was graduated from the Houston Public School System and then attended the Texas A & M University to study aeronautical engineering. Two years and several changes of major later he transferred to the University of Houston as an English major for one term. Then two years of military service in Germany and another two at the University of Houston resulted in a 1964 BA in English.

A few years following, Mr. Graham, working as a technical writer, returned to the University of Houston. In 1971 he was awarded the MBA degree and began work as a customer coordinator in industrial chemicals distribution. In 1972, Mr. Graham moved with his family to begin work at the newly-opened University of North Florida. He was employed as instructor in transportation and logistics and academic/career advisor for the College of Business Administration.

In 1975, Mr. Graham was admitted to the cooperative University of Florida/University of North Florida Ed.D. program. He has continued full-time as instructor/advisor at the University of North Florida and part-time as doctoral student. Upon completion of the Ed.D. program, he plans to continue in education as manager rather than instructor.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

Michael Y. Nunnery, Chairman
Professor of Educational
Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

Betty M. Flinchum
Professor of Instruction and
Curriculum

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

Albert B. Smith, III
Professor of Educational
Leadership

This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Education.

December, 1986

David C. Smith
Dean, College of Education

Dean, Graduate School